

ART. VI.—*Description of New and Rare Fossils obtained
by Deep Boring in the Mallee.*

PART III.¹—OSTRACODA TO FISHES.

With a complete list of Fossils found in the Borings.

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(With Plates VI.-X.).

[Read 11th June, 1914].

Class CRUSTACEA.

Super-Order OSTRACODA.

Family CYPRIDAE.

Genus ARGILLOECIA, G. O. Sars.

ARGILLOECIA BADIA, G. S. Brady. (Plate VI., Fig. 1).

Argilloecia badia, G. S. Brady, 1880, Rep. Chall., Zoology,
vol. i., pt. iii., p. 40, pl. vi., figs 3a-d. Egger, 1901,
Abhandl. k. bay. Akad. Wiss., vol xxi., pt. ii., p. 422,
pl. iv., figs. 6. 7.

Observations.—

This is the first record of the species in the fossil state. It was described by Dr. Brady from a "Challenger" dredging in 2-10 fathoms at Port Jackson, New South Wales. Dr. Egger also obtained this species from "Gazelle" dredgings off the N.W. coast of Australia at 357 metres; and off the coast of Queensland at 951 metres. Its occurrence in the fossil condition adds to the list of species of Mallee fossils, especially the ostracoda and some

1. For Part II. see this publication, vol. xxvi. (N.S.) pt. ii., 1914, pp. 301-331.

2. The fossil ostracoda of the caenozoics of southern Australia have hitherto been almost entirely neglected. They are therefore here dealt with in more detail than the remaining groups.

foraminifera, still living in the Australian area, but in lower latitudes compared with their miocene ancestors, this obviously pointing to the existence of a warmer climate in those times.

The length of the fossil specimen is .55 mm., whilst the recent example from Port Jackson measured .4mm. Dr. Egger's "Gazelle" specimen measured still less, being .21 mm. in length.

Occurrence.—Bore 5, 189-190 feet (Janjukian).

Genus MACROCYPRI, G. S. Brady.

MACROCYPRI DECORA, G. S. Brady sp. (Plate VI., Fig. 2).

Cytherideis decora, G. S. Brady, 1865, Trans. Zool. Soc., Lond., vol. v., p. 366, pl. lvii., figs. 13a-c. *Macrocypris decora*, G. S. Brady, 1880, Rep. Chall., Zool., vol. i., pt. iii., p. 44, pl. i., figs. 3a-d.; pl. vi., figs. 8a, b.

Observations.—

The geographical distribution of this species extends from the West Indies southwards to the Southern Ocean at Kerguelen Id., and thence to the Admiralty Ids.

This species has been recorded¹ in the fossil state under the name of *Paracypris decora*, from the Govt. well-boring in the Murray River Flats, 30 miles N.W. of the Nor'-West Bend of the Murray River. The age of the fossil from that locality is probably Kalimnan (L. Pliocene, "Miocene" of Prof. Tate). The present recorded specimens range from Janjukian to Kalimnan. The Mallee examples approximate to the living specimens in size.

Occurrence.—Bore 9, 256-263 feet; 315-325 feet, Kalimnan or Janjukian). Bore 10, 160-186 feet (Kalimnan). Bore 11, 542-544 feet (Janjukian).

MACROCYPRI TUMIDA, G. S. Brady. (Plate VI., Fig. 3).

Macrocypris tumida, G. S. Brady, 1880, Rep. Chall., Zool., vol. i., pt. iii., p. 43, pl. vi., figs. 2a-d. Egger, 1901, Abhandl. k. bayer. Akad. Wiss., vol. xxi., pt. ii., p. 424, pl. i., figs. 27-29.

Observations.—

This species is one of the commonest and most generally distributed in the Kalimnan and Janjukian portion of the present

1. Geol. Mag., Dec. ii., vol. iii., 1876, p. 335 (list). See also *ibid*, vol. iv., 1877, p. 526, as to the age of the beds.

borings. It varies greatly in the proportional acumination of the post-ventral angle, and may be distinguished from *M. decora* by the evenly-swollen sides and less flexuous upper and lower borders. Dr. Brady gives as original localities for the living specimens, Kerguelen Id., at 28 fathoms, and Wellington Harbour, New Zealand, from the tow-net at trawl. Dr. Egger obtained this species from the north-west coast of Australia, at 357 metres.

Occurrence.—Bore 2, 198-200 feet (Kalimnan). Bore 4, 180-190 feet (Janjukian). Bore 8, 210-219 feet (Kalimnan or Janjukian). Bore 9, 256-263 feet (Kalimnan or Janjukian). Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 457-458 feet; 540-542 feet; 542-544 feet (Janjukian).

Genus BYTHOCYPRIS, G. S. Brady.

BYTHOCYPRIS TUMEFACATA, sp. nov. (Plate VI., Figs. 4a-c and 5).

Description.—Carapace subreniform, very tumid. Seen from the side, greatest height about the middle; dorsal margin evenly arched, ventral margin straight to slightly concave, with a faint sinuosity in the middle; extremities rounded, the posterior rather more acutely than the anterior. Left valve much larger than the right, overlapping all round. Seen from above, edge view sub-oblong, anterior end sub-acutely rounded, the posterior bluntly rounded. End view sub-circular, ventral edge flatter than the dorsal. Surface smooth.

Dimensions.—Holotype: Length, 1.125 mm.; breadth of carapace, .575 mm.; height, .575 mm. Paratype: A left valve. Length, .95 mm.; height, .5 mm.

Affinities.—In outline this species is somewhat close to *Bythocypris reniformis*, G. S. Brady,¹ from which it materially differs in its more swollen carapace and less reniform outline. It is interesting to note, in common with the above comparison, that *B. reniformis* is still living in Bass Strait, so that it is very probable that the present species was the direct forerunner of the living Australian form.

Occurrence.—Bore 4, 163-170 feet (Kalimnan or Janjukian). Bore 5, 189-190 feet (Janjukian). Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 342-349 feet; 450-452 feet; 540-542 feet; 546-548 feet; 552-554 feet; 554-556 feet; 556-558 feet; 558-560 feet (Janjukian).

1. Rep. Chall. Zool., vol. i., pt. iii., 1880, p. 46, pl. v., figs. 1a-l.

Fam. BAIRDIIDAE.

Genus BAIRDIA, McCoy.

BAIRDIA AMYGDALOIDES, G. S. Brady. (Plate VI., Fig. 6).

Bairdia amygdaloides, G. S. Brady, 1865, Trans. Zool. Soc., Lond., vol. v., p. 364, pl. lvii., figs. 6a-c. Idem. 1880, Rep. Chall., Zool., vol. i., pt. iii., p. 54, pl. ix., figs. 5a-f; pl. x., figs. 2a-c. Chapman, 1910, Proc. Roy. Soc., Vict., vol. xxii (N.S.), pt. ii. p. 307.

Observations.—

The above species has been met with in fossil deposits only once previously, namely, at Batesford, near Geelong, in beds of Janjukian age. In the Mallee bores the continuity of the fossil series with the living form is seen in the fact that examples occur in both Janjukian and Kalimnan beds. The fossil specimens are slightly smaller, but otherwise typical, with the exception that the dorsal margin is rounder and the posterior acumination sulcated, as in *B. victrix*,¹ from which species it differs in its more elongate shape and less strongly arched dorsal margin. It probably points to an ancestral type from which both living forms have diverged through differences in environment.

In the living state *B. amygdaloides* has a fairly wide distribution, for it ranges from the coral islands of the Pacific and Torres Strait to Port Jackson, and even as far south as Moncoeur Id., Bass Strait. Its bathymetrical range is down to 160 fathoms.

Occurrence.—Bore 4, 180-190 feet (Janjukian). Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 542-544 feet (Janjukian).

BAIRDIA AUSTRALIS, sp. nov. (Plate VI., Fig. 7)

Bairdia ovata, G. S. Brady (non Bosquet sp.), 1865, Trans. Zool. Soc., Lond., vol. v., p. 354, pl. lvii., figs. 7a-c. Idem, (in R. Etheridge's Report), 1876, Geol. Mag. Dec. ii., vol. iii., p. 335.

Bairdia (?) *ovata*, G. S. Brady (non Bosquet sp.), 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 53, pl. vii., figs. 3a-d.

Observations.—As Dr. Brady has already pointed out,² the recent specimens from Simon's Bay, South Africa (15-20 fathoms), and from the E. of New Zealand (150 fathoms), differ from

1. G. S. Brady. Ibid, p. 56, pl. x., figs. 5a-d.

2. Tom. cit., 1880, p. 54.

Bosquet's Cretaceous fossils in having the carapace higher in proportion to the length, and in having a more acute posterior angle. Bosquet remarks in his description¹ that the valves are obliquely oval and rounded at the two extremities. The feature of a sub-acute posterior angle is so constant in both the Cainozoic and living Australian examples that it necessitates a separation of these forms from the Cretaceous specimens.² They may, therefore, appropriately bear the name *Bairdia australis*.

The earlier record of the above species as a fossil is by G. S. Brady (in R. Etheridge, as *B. ovata*, Brady). It came from the Kalimnan deposits (Lower Pliocene) of the Murray River Flats, South Australia.

In the Mallee Bores the above species was obtained from both Janjukian (Miocene) and Kalimnan beds. They are all isolated valves, and thus similar to the living examples dredged by the "Challenger."

Occurrence.—Bore 9, 256-263 feet (Kalimnan or Janjukian). Bore 11, 260-265 feet (Kalimnan). 540-542 feet; 542-544 feet; 548-550 feet; 552-554 feet; 554-556 feet (Janjukian).

Family CYTHERIDAE.

Genus CYTHERE, Müller.

CYTHERE CANALICULATA, Reuss sp. (Plate VI., Fig. 8).

Cypridina canaliculata, Reuss, 1850, Haidinger's Abhandl., vol. iii., p. 76, pl. ix., fig. 12.

Cythere canaliculata, Reuss sp., Egger, 1858, Ostrak. der Miocän.-Schicht., vol. v., p. 33, pl. v., figs. 10, 11. Brady, G. S., 1865, Trans. Zool. Soc., Lond., vol. v., p. 373, pl. lix., figs. 4a-f. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 73, pl. xiv., figs. 7a-d. Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., vol. xxi., Abth. ii., p. 432, pl. iv., figs. 15, 16.

Observations.—This distinct little species has had a world-wide distribution from Miocene times to the present day. Reuss described it from the Cainozoics of Bohemia, Austria (Miocene),

1. Bosquet, Verh. de Comm. Geol. Besch. Kaart Nederland, vol. ii., 1854, pp. 73 and 74, pl. v., figs. 6a-d.

2. For tracings and a copy of the description of Bosquet's Cretaceous record I am indebted to my friend Mr. Chas. Davies Sherborn, A.L.S.

Galicia (Miocene) and Parma (Middle Pliocene). Egger obtained it from the Miocene of Ortenburg. Lienenklaus found the same species in the Middle Oligocene of Jeurre. It has also occurred in Pleistocene deposits in Scotland, as recorded by Brady, Crosskey and Robertson. In Australia its present occurrence as a fossil is in Miocene (Janjukian) strata. In some of the examples found here, the rugosities of the carapace tend to become papillate.

In the living condition *C. canaliculata* was found by Dr. G. S. Brady in dredgings from Hobson's Bay, where the present writer has also found it in abundance, and in no wise differing from Reuss' fossil form. Brady also found it in the "Challenger" dredgings off East Moncoeur Island, Bass Strait, 38-40 fathoms; and in Port Jackson, N.S. Wales, 2-10 fathoms. The example figured by Egger (loc. cit. pl. iv., figs. 15, 16) from the "Gazelle" dredgings, Sta. 90, 18° 52' S, 116° 13' E, off Western Australia, appears to be identical with Brady's *Cythere foveolata*, which has a broader carapace, and is not so rugosely ornamented.

Occurrence.—Bore 9, 256-263 feet (Kalimnan or Janjukian). Bore 11, 219-260 feet; 260-265 feet (Kalimnan); 446-448 feet; 546-548 feet; 548-550 feet (Janjukian).

CYTHERE CRISPATA, G. S. Brady. (Plate VI., Fig. 9).

Cythere crispata, G. S. Brady, 1868, Ann. Mag. Nat. Hist., ser. 4, vol. ii., p. 221, pl. xiv., figs. 14, 15. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 72, pl. xiv., figs. 8 a-d.

Observations.—The fossil valves from the Mallee bores approach the living specimens very closely, both in form and ornament. The polygonal surface wrinklins are, if anything, slightly coarser in the fossil examples. In some features it approaches both *C. lubbockiana*, G.S.B. and *C. demissa*, G.S.B.

In the fossil condition *C. crispata* has hitherto been known only from the Pleistocene of Scotland, Ireland and Norway. It is a widely distributed form at the present time, being known from the shores of Great Britain, Norway and the Mediterranean; and in the southern hemisphere in Port Jackson (2-10 fathoms), off Booby Islands (6-8 fathoms); and in Hong Kong Harbour (7 fathoms).

This species has been lately recorded by the writer from "Endeavour" dredgings off South Australia at 100 fathoms.

Occurrence.—Bore 11, 544-546 feet; 554-556 feet (Janjukian).

CY THERE DASYDERMA, G. S. Brady. (Plate VI., Fig. 10).

Cythere dasyderma, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 105, pl. xvii., figs. 4a-f; pl. xviii., figs. 4a-f.

Observations.—The living species differs from our fossil examples in having the intersections of the angular excavations beset with short, blunt spines. In the fossils the angular pittings are strongly developed, and it may be surmised that the spines, if any existed, were fine and have been abraded.

C. dasyderma has been recorded by its first describer from 20 widely separated localities, all of which show deposits of a more or less deep sea nature.

Occurrence.—Bore 11, 552-554 feet; 554-556 feet (Janjukian).

CY THERE DEMISSA, G. S. Brady. (Plate VI., Fig. 11).

Cythere demissa, G. S. Brady, 1868, Ann. Mag. Nat. Hist., ser. 4, vol. ii., p. 180, pl. xii., figs. 1, 2. Idem. 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 66, pl. xii., figs. 1a-j. Id., 1890, Trans. Roy. Soc., Edin., vol. xxxv., pt. ii., No. 14, p. 497.

Observations.—The fossil specimens exhibit the merest trace of the posterior spines of the border sometimes seen in the living examples. Recent specimens were dredgd from Port Jackson at 2 to 10 fathoms; and from Nouméa, New Caledonia, 2 to 6 fathoms. In the South Sea Islands it occurred between tide-marks.

Occurrence.—Bore 10, 160-186 feet; 225-230 feet (Kalimnan).

CY THERE DICTYON, G. S. Brady. (Plate VII., Figs. 12, 13).

Cythere dictyon, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 99, pl. xxiv., figs. 1a-g. Egger, 1901, Abhandl. d. k. bayer. Ak. Wiss., vol. xxi., abth. ii., p. 442, pl. vi., figs. 41-43.

Observations.—It will be seen on reference to the splendid series of figures given by Dr. Brady that this species is very variable, owing to the passage of the aculeated surface in the younger stages into the strongly ribbed and excavated ornament of the older stages. In the senile condition it somewhat resembles *C. normani*, but the latter has a more obliquely truncated antero-dorsal angle.

Brady records this species from many localities, chiefly in deep water, as in the West Indies, off Sydney, and Papua. Egger notes it from Kerguelen Island, and Table Bay, S. Africa.

I have lately found this species in dredgings made by the F.I.S. "Endeavour," from E. of Tasmania at 777 fathoms, and off South Australia at 100 fathoms.

It is very interesting to note that this species is one of the most abundant in the Mallee fossil material, as it is in many deep-water dredgings at the present day. It is, moreover, an almost restricted southern form. The Mallee specimens frequently have their valves united, pointing to tranquillity of the water during the deposition of the calcareous Miocene ooze.

Occurrence.—Bore 1, 215-244 feet (Janjukian). Bore 9, 256-263 feet; 315-325 feet (Kalimnan or Janjukian). Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 219-260 feet; 260-265 feet (Kalimnan); 267-270 feet; 272-315 feet; 438-440 feet; 457-458 feet (Janjukian).

CYTHERE FLEXICOSTATA, sp. nov. (Plate VII., Figs. 14a, b).

Description.—Valve, seen from the side, elongate, pyriform; broad anteriorly, with a deep flange-like border, highest in the anterior third; ventral and dorsal margins nearly parallel for some distance, but tapering posteriorly to a blunt point; dorsal margin convex, and interrupted by a short crest-like spine, ventral margin straight; the posterior extremity is armed with a few ragged spines. In edge view the valve is thickest in the posterior third, where it terminates in a strong salient spine, falling abruptly and concavely to the posterior, and gradually to the anterior, extremity. Surface of valve ornamented with six or seven longitudinal, sinuous costae, which are more or less persistent from end to end of the valve; they pass over the central boss or tubercle, and increase in strength below and above the median area, being carried over on to the anterior flange, and posteriorly take a sudden bend dorsally, passing steeply down to the blunt, spinous hind margin. Between the costae there are faint pittings or excavations.

Dimensions.—Length of valve, .92 mm.; height, .44 mm.; thickness of carapace, about .6 mm.

Observations.—So far as I can find, there is no described species which shows a decided relationship to the above. The general form suggests a remote resemblance to the genus *Bythocythere*,

but the well-marked anterior border and position of the spines and tubercle suggest an affinity with forms like *Cythere rastromarginata*.

Occurrence.—Bore 10, 310-320 feet (Kalimnan or Janjukian).

CY THERE LACTEA, G. S. Brady. (Plate VII., Fig. 15).

Cythere lactea, G. S. Brady, 1865, Trans. Zool. Soc., Lond., vol. v., p. 377, pl. lx., figs. 3a-c. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 91, pl. xxii., figs. 1a-d.

Observations.—The present fossil occurrences show this comparatively rare form to have existed as early as the Miocene. Our specimen matches exactly that figured by Dr. Brady from an Australian sounding at 17 fathoms.

Occurrence.—Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 562-564 feet (Janjukian).

CY THERE LEPRALIOIDES, G. S. Brady. (Plate VII., Fig. 16).

Cythere lepralioides, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 94, pl. xix., figs. 5a-d.

Observations.—The Mallee specimens came from a Kalimnan horizon (Lower Pliocene). They are fairly typical as compared with the living form, the specimen here figured being a somewhat extreme variety with an unusually broad posterior extremity. Brady records this species from two localities only, viz., Simon's Bay, S. Africa (15-20 fathoms), and off the Cape of Good Hope (150 fathoms). I have lately determined this species from "Endeavour" dredgings taken east of Tasmania at the exceptional depth of 1122 fathoms.

Occurrence.—Bore 6, 114-150 feet (Kalimnan). Bore 8, 210-219 feet (Kalimnan or Janjukian). Bore 10, 195-225 feet (Kalimnan).

CY THERE LUBBOCKIANA, G. S. Brady. (Plate VII., Fig. 17).

Cythere lubbockiana, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 68, pl. xiv., figs. 6a-d.

Observations.—This is a shallow water species in modern deposits, being recorded by Dr. Brady from Booby Island, in 6-8 fathoms.

It occurs in the Mallee bore at a distinctly Janjukian (Miocene) horizon, as well as in samples which have a mixed Janjukian and Kalimnan (Lower Pliocene) fauna.

The fossils differ from the living shells in having the surface-pittings rather more pronounced, otherwise they agree.

Occurrence.—Bore 8, 210-219 feet (Kalimnan or Janjukian). Bore 11, 260-265 feet (Kalimnan); 446-448 feet; 540-542 feet (Janjukian).

CYTHERE MILITARIS, G. S. Brady sp. (Plate VII., Fig. 18).

Cythereis militaris, G. S. Brady, 1866, Trans. Zool. Soc., Lond., vol. v., p. 385, pl. lxi., figs. 9a-d.

Cythere clavigera, Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 109, pl. xxiii., figs. 7a-d.

Observations.—From an extensive series of valves which I refer to the above form, obtained from dredgings round the Australian coast, I am convinced that *C. militaris*, as figured by Dr. Brady, represents the young form of the later described *C. clavigera*, as Brady himself has suggested.¹

Several early Cainozoic forms allied to this species have been described by Reuss, Speyer and others, which show it to be one of a related group which has persisted throughout the Cainozoic period.

The figured specimen is an extreme form in which the central hystricated crest is strongly developed, and the margin regularly beset with blunt spines. Others of the fossil specimens are matched by Brady's *C. clavigera*, which come from Port Jackson in New South Wales (2-10 fathoms); whilst an occasional young form agrees with the figure of *C. militaris*, passage forms being found which link up the series. The species is very common in the first of the depths indicated below. This is a glauconitic clay in which this species, together with *C. dictyon*, G.S.B., and other ostracodal shells, form about 15 per cent. of the washings.

Occurrence.—Bore 9, 256-263 feet (Kalimnan or Janjukian). Bore 11, 260-265 feet (Kalimnan); 562-564 feet (Janjukian).

CYTHERE NORMANI, G. S. Brady. (Plate VII., Fig. 19).

Cythere normani, G. S. Brady, 1866, Trans. Zool. Soc., Lond., vol. v., p. 379, pl. lxi., figs. 5a-d. Idem, 1880, Rep. Chall. Zool. vol. i., pt. iii., p. 101, pl. xvii., figs. 3a-d.; pl. xxvi., figs. 4a, b.

Observations.—Our specimens closely agree with the figures given by Dr. Brady in his original account of the species, specimens of which were dredged from the Abrolhos Bank, S. Africa. The

1. R. Etheridge, Geol. Mag., Dec. ii., vol. iii., 1876, p. 335.

"Challenger" specimens came from Heard Island in the Southern Ocean, at 150 fathoms. *Cythere normani* was also recorded as a fossil by Dr. Brady, from a well-sinking in the Murray Flats of South Australia,¹ in beds of later Tertiary age. I have lately recorded this species from a raised beach (Pleistocene) on the slopes of Mount Erebus in the Antarctic, from material collected on the Shackleton Expedition.

Occurrence.—Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 444-446 feet; 446-448 feet (Janjukian).

CY THERE OBTUSALATA, G. S. Brady. (Plate VII., Fig. 20).

Cythere obtusalata, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 91, pl. xii., figs. 1a-c.

Observations.—It is interesting to record this striking little species for the first time from a fossil deposit, at an horizon near the junction of the Janjukian and Kalimnan beds.

As a recent species *C. obtusalata* has been recorded from off E. Moncoeur Island, Bass Strait, at 38-40 fathoms, and off the Admiralty Islands at 16-25 fathoms (G. S. Brady). Also from Kerguelen Island at 104 metres; near W. Africa at 677 metres; off Monrovia, W. Africa at 18 metres, and near Mauritius at 411 metres (J. G. Egger).

The fossil specimens are closely comparable with the recent forms figured by Dr. Brady.

Occurrence.—Bore 9, 256-263 feet (Kalimnan or Janjukian). Bore 11, 442-444 feet; 446-448 feet (Janjukian).

CY THERE OVALIS, G. S. Brady. (Plate VII., Fig. 21).

Cythere ovalis, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 66, pl. xiv., figs. 4a-d.

Observations.—This species was originally recorded from recent dredgings off Booby Island, Torres Strait at 6-8 fathoms.

The fossil specimen here figured comes from a Janjukian horizon (Miocene). It is closely comparable with the living form, only slightly differing in the more regular polygonal surface-pittings, and in the absence of short spines at the posterior extremity.

Occurrence.—Bore 11, 267-270 feet (Janjukian).

CYTHERE PARALLELOGRAMMA, G. S. Brady. (Plate VII., Fig. 22).

Cythere parallelogramma, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 82, pl. xv., figs. 1a-e. Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., vol. xxi., abth. ii., p. 442, pl. vi., figs. 15, 16.

Observations.—Originally dredged off Prince Edward's Island in the Southern Ocean at 50-150 fathoms, this species has lately been found by the writer in a sounding off Cape Wiles, S. Australia at 100 fathoms. Dr. Egger recorded it from the West African coast, and it has lately occurred as a Pleistocene fossil in the Antarctic.

This species shows a considerable amount of variation, the ornament in some specimens becoming granulate at the intersection of the reticulations, whilst the carapace may be more inflated. It seems to link on to *Cythere wyville-thomsoni* by annectant characters.

Occurrence.—Bore 9, 315-325 feet (Kalimnan or Janjukian). Bore 10, 195-225 feet (Janjukian).

CYTHERE POSTDECLIVIS, sp. nov. (Plate VII., Figs. 23a, b).

Description.—Shell, seen from the side, oblong ovate, highest in the anterior third, with parallel sides and broad recurved anterior end, which projects towards the ventral margin, and is roundly truncate at the dorsal angle; posterior extremity bluntly acuminate. In edge view, the carapace is tumid, depressed in the median area, steeply falling fore and aft to the extremities, the posterior being deeply impressed, and often with a fossa in the central area. Surface-ornament consisting of cancellated and vermiform depressions, which have a distinct trend in certain parts of the shell, tending to parallelism at the hinder end and the dorsal margin. The muscle-spot area is indicated by a stellate arrangement of the cancellae.

Dimensions.—Length, 1.4 mm.; height, .675 mm.; thickness of carapace, .6 mm.

Observations.—In a general way this species is related to both *C. ovalis* and *C. cancellata*. The ornament, however, is so distinct as to warrant the establishment of a new species. The posterior depression is more marked than in *C. cancellata*. It is one of the commonest forms in the present collection of Mallee ostracoda.

Occurrence.—Bore 3, 201-220 feet (Kalimnan or Janjukian). Bore 8, 210-219 feet (Kalimnan or Janjukian). Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 342-349 feet; 438-440 feet; 440-442 feet; 442-444 feet; 446-448 feet; 457-458 feet; 540-542 feet; 542-544 feet; 544-546 feet; 546-548 feet; 548-550 feet; 564-566 feet (Janjukian).

CY THERE RASTROMARGINATA, G. S. Brady. (Plate VII., Fig. 24).

Cythere rastromarginata, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 83, pl. xvi., figs. 1a-d.; 2a-d. Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., vol. xxi., abth. ii., p. 442, pl. vi., figs., 5-9.

Observations.—The "Challenger" examples came from Bass Strait, and off Honolulu. Egger obtained it between Fiji and Samoa, and from the Western Australian coast.

This is its first occurrence in the fossil state. It occurs in the bores in the Kalimnan (Lower Pliocene) strata, or even below that series. Like several other species of ostracoda occurring in these borings, the form persists in the present Bass Strait fauna, not many miles removed from the site of the old Murray Gulf.

Occurrence.—Bore 8, 210-219 feet (Kalimnan or Janjukian). Bore 11, 170-175 feet; 199-209 feet; 219-260 feet (Kalimnan).

CY THERE SCABROCUNEATA, G. S. Brady. (Plate VIII., Fig. 25).

Cythere scabrocuneata, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 103, pl. xvii., figs. 5a-f; pl. xxiii., figs. 2a-c.

Observations.—The figured specimen is a quadrate and coarsely papillate variety of the above species, but it is impossible to separate it from its associated typical examples from the same series, some of which are identical with the living forms. This is another species still living in Bass Strait, having remained persistent in nearly the same area from Janjukian (Miocene) times. It has also been recorded from recent dredgings in the Inland Sea, Japan, and in Wellington Harbour, New Zealand.

Occurrence.—Bore 11, 430-432 feet; 442-444 feet; 444-446 feet; 446-448 feet; 457-458 feet; 544-546 feet; 552-554 feet (Janjukian).

CYTHERE SCINTILLULATA, G. S. Brady. (Plate VIII., Fig. 26).

Cythere scintillulata, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 62, pl. xiv., figs. 3a-d.

Observations.—This species is represented by one typical specimen in the bores, at a level showing a mixed Kalimnan (Lower Pliocene) and Janjukian (Miocene) fauna. This is its first occurrence in the fossil state.

C. scintillulata was dredged in the Straits of Magellan by the "Challenger," at 55 fathoms.

Occurrence.—Bore 5, 189-190 (Janjukian).

CYTHERE SCUTIGERA, G. S. Brady. (Plate VIII., Fig. 27).

Cythere scutigera, G. S. Brady, 1868, Les Fonds de la Mer, vol. i., p. 70, pl. viii., figs. 15, 16. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 109, pl. xxii., figs. 5a-f.

Observations.—This species, as represented in the Mallee Bores, shows the general specific characters of the recent species, but is less distinct in the sharper features of the carapace.

Brady has recorded this species from Amboyna, Java and Papua.

Occurrence.—Bore 11, 442-444 feet (Janjukian).

CYTHERE WYVILLE-THOMSONI, G. S. Brady. (Plate VIII., Fig. 28).

Cythere wyville-thomsoni, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 82, pl. xx., figs. 4a-f. Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., vol. xxi. abth. ii., p. 444, pl. vi., figs. 13-14.

Observations.—A single specimen of this form, typical in nearly all its characters with the recent form, but not so spinous at the extremities, and with more parallel sides, occurs in the Janjukian (Miocene) of the Mallee bores.

The "Challenger" obtained it from Heard Island and Kerguelen Island in the Southern Ocean, and in Torres Strait. Egger's "Gazelle" specimens came from the west coast of Africa.

Occurrence.—Bore 10, 310-320 feet (Kalimnan or Janjukian).

Genus KRITHE, Brady, Crosskey and Robertson.

KRITHE EGGERI, sp. nov. (Plate VIII., Figs. 29a, b).

Description.—Valve, seen from the side, narrow, subreniform, anterior extremity rounded, posterior bluntly pointed at the ventral angle; dorsal margin arched, ventral slightly sinuous. The anterior margin is bordered by a flange of unusual width for this genus. Surface minutely punctate. Edge view of carapace ovate, compressed anteriorly, broad at hinder end.

Dimensions.—Length, .615 mm.; height, .27 mm.; thickness of carapace, .27 mm.

Affinities.—This species is related to *Krithe producta*, G. S. Brady,¹ but is much narrower, and has a conspicuous, flange-like anterior border.

Named in honour of Dr. J. G. Egger, who has already described more than one new species of this genus.

Occurrence.—Bore 11, 260-265 feet (Kalimnan).

Genus LOXOCONCHA, G. O. Sars.

LOXOCONCHA AUSTRALIS, G. S. Brady. (Plate VIII., Fig. 30).

Loxoconcha australis, G. S. Brady, 1880, Rep. Chall Zool., vol. i., pt. iii., p. 119, pl. xxviii., figs. 5a-f.; pl. xxix., figs. 3a-d.

Observations.—The "Challenger" recorded this species from Port Jackson, New South Wales, at 2-10 fathoms, and from Booby Island, Torres Strait, 6-8 fathoms. I have lately obtained it from a sounding east of Tasmania, 777 fathoms, dredged by F.I.S. "Endeavour."

Typical specimens occur in both Janjukian and Kalimnan strata in the bores, showing the species to have been established in Australian seas as early as the Miocene.

Occurrence.—Bore 7, 142 feet 3 inches-155 feet (Kalimnan). Bore 10, 195-225 feet; 225-230 feet (Kalimnan). Bore 11, 444-446 feet (Janjukian).

1. Rep. Chall. Zool., vol. i., pt. iii., 1880, p. 114, pl. xxvii., figs. 1a-j.

Genus XESTOLEBERIS, G. O. Sars.

XESTOLEBERIS CURTA, G. S. Brady sp. (Plate VIII., Fig. 31).

(1) *Cytheridea curta*, G. S. Brady, 1865, Trans. Zool. Soc., Lond., vol. v., p. 370, pl. lviii., figs. 7a, b.

Xestoleberis curta, G. S. Brady sp., 1868, Les Fonds de la Mer, vol. i., p. 79, pl. x., figs. 16-18. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 126, pl. xxxi., figs. 6a-d.

Observations.—The specimen from the bore, at a Kalimnan horizon, is in every way typical.

As a recent species this form occurs in the Southern Ocean at Kerguelen Island; at Port Jackson in New South Wales, at Booby Island, Torres Strait, and in the Pacific Ocean at Honolulu, Fiji, and New Caledonia.

Occurrence.—Bore 10, 225-230 feet (Kalimnan).

XESTOLEBERIS MARGARITEA, G. S. Brady sp. (Plate VIII., Fig. 32).

Cytheridea margaritea, G. S. Brady, 1865, Trans. Zool. Soc., Lond., vol. v., p. 370, pl. lviii., figs. 6a-d.

Xestoleberis margaritea, G. S. Brady sp., 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 127, pl. xxx., figs. 2a-g. Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., vol. xxi., abth ii., p. 456, pl. iii. figs. 27-30.

Observations.—This species occurs in the Mallee bores at the top of the Janjukian series, thus showing the specimens to have lived in Miocene times.

In the living condition, *X. margaritea* is known from the Mediterranean and off Booby Island, Torres Strait.

Occurrence.—Bore 11, 267-270 feet (Janjukian).

XESTOLEBERIS VARIEGATA, G. S. Brady. (Plate VIII., Fig. 33).

Xestoleberis variegata, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 129, pl. xxxi., figs. 8a-g.

Observations.—In the living condition this species has occurred at Cape Verde, Tongatabu, Fiji, Samoa, Funafuti and New Caledonia, in depths varying from shallow water to 1150 fathoms. I have lately found this species in a sounding by F.I.S. "Endeavour," off Cape Wiles, S. Australia, at 100 fathoms.

The present example from the bore came from the top of the Janjukian series (Miocene). It is in every way comparable with recent examples of the species now living in the Southern Ocean at 100, fathoms, even to the distinct variegation of the carapace.

Occurrence.—Bore 11, 267-270 feet (Janjukian).

Genus CYTHERURA, G. O. Sars.

CYTHERURA CAPILLIFERA, sp. nov. (Plate VIII., Figs. 34*a*, *b*).

Description.—Carapace oblong, compressed anteriorly. Seen from the side, the valve is highest at the posterior third; dorsal margin straight in the middle, and convexly rounded to the extremities; ventral border widely concave; surface gently sloping to the front, swollen and abrupt behind, with a short caudal extremity. Edge view compressed at the anterior, abruptly truncated behind, and steeply incurved to the caudal prolongation. Surface ornamented with fine, sinuous, hair-like lines, especially on the ventral area, generally punctate over the whole surface. Colour patches of organic origin still visible on the valve.

Dimensions.—Length, 1.04 mm.; height, .423 mm.; thickness of carapace, .423 mm.

Affinities.—The nearest allied form to the above appears to be *Cytherura similis*, G. O. Sars,¹ a species found round the shores of Great Britain, and in the Arctic and Scandinavian seas, as well as a Pleistocene fossil of Scotland, Ireland and Norway.

Occurrence.—Bore 11, 175-197 feet (Kalinman).

CYTHERURA OUYENENSIS, sp. nov. (Plate VIII., Figs. 35*a*, *b*).

Description.—Carapace oblong, medially compressed; seen from the side, rhomboidal, highest towards the front, height exceeding half the length; anterior evenly rounded at the ventral, and truncately so at the dorsal angle; posterior bluntly caudate; dorsal line short and straight, curving steeply to the posterior, ventral margin slightly concave, swelling out towards the posterior extremity, where it suddenly curves inward to meet the blunt termination. Edge view of carapace ovate, compressed in front and bluntly acuminate behind; median area slightly depressed. Shell surface relieved with numerous impressed puncta, encircled by a clear ring; other-

1. See Brady and Norman, Trans. R. Dublin Soc. 1889, vol. iv., ser. ii., p. 203, pl. xviii., figs. 7-9

wise fairly smooth, excepting for a few striae parallel with the ventral and anterior margins.

Dimensions.—Length, .634 mm.; height, .346 mm.; thickness of carapace, .308 mm.

Affinities.—The above species resembles a weak form of *Cytherura rudis*, G. S. Brady,¹ that is, having minute pittings instead of polygonal excavations, and without the faint flexuous ribs of that species. The marked distinction of *Cytherura ouygenensis* in having a more rounded contour separates it from Brady's living species, which came from the Arctic Seas and, doubtfully, from the Straits of Magellan. Since Brady's recorded occurrence, *C. rudis* has been found by the writer in soundings from the Antarctic taken by Capt. J. K. Davis in the "Nimrod" (British Antarctic Expedition, 1907-9). That specimen also showed a polygonal rather than the punctate ornament of the present species.

Occurrence.—Bore 11, 267-270 feet (Janjukian).

Genus CYTHEROPTERON, G. O. Sars.

CYTHEROPTERON BATESFORDIENSE, Chapman. (Plate VIII., Fig. 36).

Cytheropteron batesfordiense, Chapman, 1910, Proc. Roy. Soc., Vict., vol. xxii. (N.S.), pt. ii., p. 300, pl. ii., figs. 7a-c.

Observations.—Since the discovery of the originally described specimens in the Batesford Limestone, this species has been found in some abundance in the lower strata of the Mallee bores.

In the original description, I noticed the relationship of this form with *Cytheropteron wellingtoniense*, Brady. There is still another species showing close affinities which occurs fossil in the Cretaceous of Basdorf in Mecklenburg, namely, *C. triangulare*, Reuss sp.², a species which also occurs in the Cainozoic (London Clay) of Copenhagen Fields and Piccadilly, London. This species differs in having the alae less salient posteriorly, otherwise, as seen in edge view, the two forms are very similar.

Occurrence.—Bore 2, 211-240 feet (Janjukian). Bore 10, 310-320 feet (Kalimnan or Janjukian). Bore 11, 438-440 feet; 440-442 feet; 442-444 feet; 444-446 feet; 457-458 feet; 548-550 feet (Janjukian).

1. Ann. Mag. Nat. Hist., ser. 4, vol. ii., 1868, p. 34, pl. v., figs. 15-17. Rep. Chall. Zool., vol. i., pt. iii., 1880, p. 152, pl. xxxii., figs. 3a-d.

2. *Cythere triangularis*, Reuss, Zeitschr. d. deutsch. Gesellsch., vol. vii., 1855, p. 279, pl. x. fig. 3. Jones, Mon. Tert. Entom. (Pal. Soc.), 1857, p. 25, pl. vii., fig. 5. *Cytheropteron triangulare* Jones, Mon. Tert. Entom. (Pal. Soc.), 1889, p. 44, pl. ii., figs. 19a-c.

CYTHEROPTERON BATESFORDIENSE, Chapman., var. *aculeata*, var. nov.
(Plate VIII., Fig. 37).

Description.—This variety is sufficiently well marked to merit a distinctive name, since it has a more compressed carapace, and a sharp ventral margin. Towards the posterior extremity, the ventral border carries a series of short, strong prickles. The related European Cainozoic form, *C. triangulare* sometimes shows very fine aculeations on the ventral edge.

Occurrence.—Bore 11, 453-454 feet (Janjukian).

CYTHEROPTERON POSTUMBONATUM, sp. nov. (Plate VIII., Figs. 38).

Description.—Carapace oblong, compressed at the extremities. Seen from the side, the valve is tumid in the central area, depressed around the margins; anterior extremity with a subangular margin, posterior rounded; surface in anterior third swollen into a pear-shaped inflation, behind which is a deep furrow joining the marginal depressed areas, whilst posteriorly the valve is again inflated, and towards the ventral side this prominence is produced into a short recurved hornlike process. Edge view subovate, compressed at the ends, with the post-ventral process pointing outwards and backwards.

Surface of valve ornamented with numerous obscure pittings and fine parallel striae towards the dorsal margin.

Dimensions.—Length, .5 mm.; height, .21 mm.; thickness of carapace, including the process, circ. .4 mm.

Affinities.—The appearance in the Australian Cainozoic of this modification of a well-defined Cretaceous group of *Cytheroptera* is extremely interesting. *C. postumbonatum* is most closely allied to *C. umbonatum*, Williamson sp.,¹ a well-known member of the English Chalk and Chalk-marl of Norwich, Woolwich, Dover and Charing. The Danish and British variety, *C. umbonatum*, var. *acanthoptera*, Marsson var.² from the Island of Rügen, Norfolk, Dunstable and Antrim, is distinguished from the specific form in having a much longer postero-ventral spine and a prickly rather than a punctate

1. *Cytherura umbonata*, Williamson, Mem. Manch. Lit. and Phil. Soc., vol. viii., 1847, p. 79, pl. iv., fig. 78. *Cytheropteron umbonatum*, Will. sp. Jones, Mon. Cret. Entom. (Pal. Soc.), 1890, p. 40, pl. i., figs. 21-26.

2. *Cythere acanthoptera*, Marsson, Mittheil. naturw. Ver. Neu-Vorpommern und Rügen, 1880, p. 45, pl. iii., figs. 14a-c. *Cytheropteron umbonatum*, Will. sp. var. *acanthoptera*, Marsson, var., Jones, Mon. Cret. Entom. (Pal. Soc.), 1890, p. 41, pl. i., figs. 11-13; pl. iv., figs. 22-29.

surface. The Australian specimen is short-spined and punctate, and differs from *C. umbonatum* in the greater length of the shell and the deeper median sulcus.

Occurrence.—Bore 8, 210-219 feet (Kalimnan or Janjukian).

CYTHEROPTERON PRAEANTARCTICUM, sp. nov. (Plate IX., Figs. 39*a*, *b*).

Description.—Valve, seen from the side, oblong, tapering to the anterior, which is rounded, produced posteriorly. Margins surrounded by a distinct rounded flange; dorsal strongly convex and slightly sinuous, ventral nearly straight. Surface compressed towards the dorsal margin, rising rapidly from the antero-dorsal to the ventral side to form a prominent ala with a moderately sharp point, but not hooked. The caudal extremity is sharp and superficially rounded. Edge view of carapace, trapezoidal. Surface of valve on the alar slope depressed in the median area, and vellicate, marked by numerous fine punctations.

Dimensions.—Length, .638 mm.; height, to point of ala, .4 mm.; thickness of carapace, .73 mm.

Affinities.—The relationship of the present species clearly lies with the Antarctic species, *C. antarcticum*, recently found by me in material from a raised beach (Pleistocene) S.E. of Mt. Larsen (Shackleton Expedition, 1908). That species differs, however, in the more attenuated carapace, and the sharply pointed but less expanded alar process. Another species approaching the above *C. praeantarcticum* is *Cytheropteron hamatum*, G. O. Sars, which differs essentially in the more depressed alae with their hooked terminals. The latter is a North Atlantic and Arctic species, in Pleistocene and recent deposits.

Occurrence.—Bore 9, 256-263 feet (Kalimnan).

CYTHEROPTERON RETICOSUM, sp. nov. (Plate IX, Figs. 40*a*, *b*)

Description.—Carapace subquadrate, compressed. Seen from the side, of nearly equal width from end to end; anterior extremity broadly rounded, posterior caudate; dorsal margin widely convex, ventral nearly straight; a depressed flange runs round almost the

1. *Cytheropteron vespertilio*, G. S. Brady, non Reuss, 1868, Ann. and Mag. Nat. Hist., ser. 4, vol. ii., p. 33, pl. v., figs. 6, 7. *Cytheropteron hamatum*, G. O. Sars, 1869, Nye Dybvandskrustaceer fra Lofoten. Vidensk Forhand., p. 172.

entire valve margin. Alar beak moderately salient, gradually rising from the antero-dorsal angle towards the postero-ventral, and terminating in a sharp marginal angle; surface of ala depressed under the carinal edge, near the posterior extremity of the shell; caudate portion of the carapace much compressed. Edge view suboval, compressed at the extremities, and broader towards the posterior third. Shell surface covered with a fine network of irregularly polygonal areolae.

Dimensions.—Length, .58 mm.; height, .31 mm.; thickness of carapace, .16 mm.

Affinities.—So far as I am aware the nearest living species is *C. wellingtoniense*, G. S. Brady,¹ which was dredged in Wellington Harbour, New Zealand. *C. reticosum* differs in having more quadrate valves, more prolonged alae and a reticulated ornament. In general form it is like a much compressed variety of *Cytheropteron batesfordiense*.

Occurrence.—Bore 10, 195-225 feet (Kalimnan).

CYTHEROPTERON ROSTRATUM, sp. nov. (Plate IX., Figs. 41*a*, *b*).

Description.—Shell compressed, ovate; in side view arcuately oval, highest in the middle; anterior extremity compressed, narrowly rounded, the posterior extremity subacute, excavated ventrally; dorsal margin strongly arched, curving steeply to the extremities. Ventral margin concave in the lower middle, and convex towards the anterior end. Edge view compressed ovate, acute at anterior, blunt at posterior end. Surface of valves finely and striately punctate, the ornament being concentric with the margins. The surface markings are more distinctly seen when the shell surface is moistened.

Dimensions.—Length, .423 mm.; height, .21 mm.; thickness of carapace, .21 mm.

Affinities.—The nearest allied species to the above is *Cythere scaphoides*, G. S. Brady,² from Kerguelen Island, in 20-50 fathoms. They differ, however, in the outline, for the living species is oblong and not arcuate. The surface ornament in both forms is similar.

Occurrence.—Bore 11, 267-270 feet (Janjukian).

1. Rep. Chall. Zool., vol. i., pt. iii., 1880, p. 136, pl. xxxiv., figs. 4*a-d*.

2. Tom. supra cit., p. 136, pl. xxxiii., figs. 1*a-d*.

Fam. CYTHERELLIDAE.

Genus CYTHERELLA, Jones.

CYTHERELLA AURICULUS, sp. nov. (Plate IX., Figs. 42a, b ; 43).

Description.—Carapace oblong, compressed. Seen from the side, valves subquadrate, with a marginal raised rim and depressed central area relieved in the median line by a raised longitudinal and crescentic bar. In the young example figured the central raised band starts from the dorsal margin, and continues to curve down and round, all but enclosing a central suboval space; dorsal margin nearly straight, with a median concavity, ventral broadly concave; both extremities widely rounded. Edge view narrow oblong, relieved by the marginal and median prominences. The general, depressed surface of the valve is roughly granulate, the marginal and central bars smooth.

Dimensions.—Length of larger type specimen, .71 mm.; width, .41 mm.; thickness of carapace, .3 mm.

Length of smaller type specimen, .5 mm.; width, .27 mm.

Affinities.—There is one living species, *Cytherella latimarginata*, G. S. Brady,¹ which resembles the above in having an encircling fillet around the margin, but the centre of the valve is occupied by a long, rounded protuberance, instead of a narrow curved bar as in *C. auriculus*, the latter more nearly resembling the contour of an ear, hence the name.

The closest affinity lies, however, with some Cretaceous forms well known from the English and European Chalk, the central type of which is *Cytherella williamsoniana*, Jones.² This species has the central bar broken to some extent, whilst the restricted character of the central ornament, especially in our smaller figured type, is perhaps more nearly approached in *Cytherella chapmani*, Jones,³ from the Gault of Godstone, Surrey, England.

It is extremely curious to find this species and the previously mentioned *Cytheropteron postumbonatum* of the Australian Miocene so closely approaching their Cretaceous analogues.

Occurrence.—Bore 11, 219-260 feet (Kalimian).

1. Rep. Chall. Zool., vol. i., pt. iii., 1880, p. 178, pl. xxxvi., figs. 7a-d.

2. Mon. Cret. Entom. (Pal. Soc.), 1849, p. 31, pl. vii., figs. 26a-h. Id., ibid., 1890, p. 48, pl. iii., figs. 55-62.

3. Mon. Cret. Entom. (Pal. Soc.), 1890, p. 49, pl. iii., fig. 70.

CYTHERELLA LATA, G. S. Brady. (Plate IX., Figs. 44a, b).

Cytherella lata, G. S. Brady, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 173, pl. xlv., figs. 5a-e.

Observations.—This species is found in the living condition in as widely separated areas as the West Indies and the Japanese Sea. At Torres Strait it was found in 155 fathoms.

The fossil example here depicted differs in no essential details from the valves of the living form.

Occurrence.—Bore 5, 163-175 feet (Kalimnan or Janjukian).

CYTHERELLA POLITA, G. S. Brady. (Plate IX., Figs. 45a, b).

Cytherella polita, G. S. Brady, 1868, Les Fonds de la Mer, p. 161, pl. xix., figs. 5-7. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 172, pl. xliii., figs. 5a-c; pl. xlv., figs. 1a-g.

Observations.—This species has been recorded in the living condition from the West Indies; Wellington Harbour, New Zealand, in the tow-net; and from the mouth of Rio de la Plata, 13 fathoms.

Cytherella polita is one of the best distributed of the cytherellids in the Mallee washings. The fossil examples agree in practically all points with the recent, with the exception that the former tend to exhibit a broader anterior border.

Occurrence.—Bore 5, 153-175 feet (Kalimnan or Janjukian). Bore 8, 210-219 feet (Kalimnan or Janjukian). Bore 9, 315-325 feet (Kalimnan or Janjukian). Bore 10, 160-186 feet; 195-225 feet (Kalimnan). Bore 11, 457-458 feet; 546-548 feet (Janjukian).

CYTHERELLA PULCHRA, G. S. Brady. (Plate IX., Figs. 46a, b).

Cytherella pulchra, G. S. Brady, 1866, Trans. Zool. Soc., Lond., vol. v., p. 361, pl. lvii., figs. 1a-d. Idem, 1880, Rep. Chall. Zool., vol. i., pt. iii., p. 174, pl. xlv., figs. 3a, b.

Observations.—The living examples were found at Port Jackson at 2-10 fathoms; and off Ascension Island, 42 fathoms. As in many other instances in the Mallee fauna, this species has survived in Australian waters from Miocene times. The fossil examples are identical in all points with the type of the living form. *C. pulchra*

may be readily distinguished from *C. polita*, not only in the narrower extremities, but also in the angularly tumid outline of the carapace in edge view. It is extremely abundant in the washings from the Mallee bores, and occurs from the Miocene upwards.

Occurrence.—Bore 2, 198-200 feet (Kalimnan). Bore 3, 260 feet, circ. (Janjukian). Bore 4, 163-170 feet (Kalimnan). Bore 9, 256-263 feet; 315-325 feet (Kalimnan or Janjukian). Bore 10, 230-254 feet (Kalimnan). Bore 11, 175-197 feet; 197-199 feet; 219-260 feet (Kalimnan). 349-353 feet; 540-542 feet; 554-556 feet; 558-560 feet (Janjukian).

CYTHERELLA PUNCTATA, G. S. Brady. (Plate IX., Fig. 47).

Cytherella punctata, G. S. Brady, 1866, Trans. Zool. Soc., Lond., vol., v., p. 362, pl. lvii., figs., 2a, b. Idem, 1880, Rep. Chall. Zool., vol., i., pt. iii., p. 174, pl. xxxvi., figs. 6a, b.; pl. xlv., figs., 4a-g. Egger, 1901, Abhandl. d. k. bayer. Akad. Wiss., vol. xxi., abth. ii., p. 469, pl. iv., figs. 34, 35.

Observations.—As a recent species this is one of the deeper water forms of the genus *Cytherella*. It has been noted from Tristan d'Acunha; Port Jackson; from Challenger Sta. 167 in the Southern Ocean between Sydney and New Zealand; off the Ki Islands; and in the Straits of Magellan.

Egger records the above species from the west coast of Australia at 357 metres.

Occurrence.—Bore 6, 114-150 feet (Kalimnan). Bore 9, 256-263 feet (Kalimnan or Janjukian). Bore 11, 267-270 feet (Janjukian).

CYTHERELLA SUBTRUNCATA, sp. nov. (Plate IX., Figs. 48a, b).

Description.—Carapace, from the side, compressed oblong or subrectangular, with broadly rounded extremities; dorsal margin nearly straight, slightly concave in the middle, ventral broadly concave, antero- and postero-ventral angles rather more produced than the dorsal; encircling border or flange fairly conspicuous on the ventral edge. Median surface depressed. Seen from below, compressed, elongate, pyriform, the contour depressed in the middle, anterior extremity compressed and rounded, the posterior inflated and much thicker. Surface smooth.

Dimensions.—Length, .73 mm.; width, .365 mm.; thickness of carapace, .29 mm.

Affinities.—The above species differs from Dr. Brady's *C. truncata*¹ in having a depression in the median face of each valve, and in the swollen and truncated posterior extremity in edge view.

The allied *C. truncata* has been recorded from Torres Strait. The present fossil species is from a Kalimnan (Lower Pliocene) horizon in both cases.

Occurrence.—Bore 10, 225-230 feet (Kalimnan). Bore 11, 175-197 feet (Kalimnan).

Super-Order CIRRIPIEDIA.

Fam. LEPADIDAE.

Genus SCALPELLUM, Leach.

SCALPELLUM SUBQUADRATUM, sp. nov. (Plate X., Figs. 49*a-d*;
50 and 51*a, b*).

Description.—Carina (holotype).—Elongate, strongly bowed inwardly, with roof flat, gradually and evenly widening from apex to base, and very slightly convex towards the basal margin; surface smooth except for faint growth-lines. Sides generally flat, thus giving a square-sided appearance to the valve, and also showing indications of a median groove. Basal margin broadly rounded. Inner surface of valve deeply concave. Inner edge of carina crenulate near the apex, and cut through by short channels near the base.

Another specimen (paratype), and probably the rostral latus, is narrow, of slightly thinner build, and showing strongly arched growth-lines along the length of the valve; inner surface concave and smooth.

Scutum (paratype), elongate triangular; occludent margin perfectly straight, basal, angularly rounded; tergal margin slightly concave, with a nodulose edge. A longitudinal ridge runs from the apex to the base, and close to the occludent margin. Superficial growth-lines and shaded colour-patches very distinct. Inner surface shows the pit for the adductor scutorum, above which is a deep fold running to the apex, and marked by some linear and sinuous lines of growth.

Dimensions.—Carina (holotype), extreme apex wanting. Length, 20 mm.; width at the base, 4.5 mm.; thickness of carina near apical end, 2.25 mm.

1. Les Fonds de la Mer, 1868, p. 154, pl. xix., figs. 3, 4. Rep. Chall. Zool., vol. i., pt. iii., 1880, p. 174, pl. xxxvi., figs. 3*a-d*.

Rostral latus, extreme apex wanting. Length, 8 mm.; width at base, 2.25 mm.; thickness of carina at apical end, 1 mm.

Scutum. Length, minus apex, 7.75 mm.; greatest width, 9 mm.

Affinities.—The above species shows a remarkable resemblance to *Scalpellum quadratum*, Dixon sp.,¹ a form which occurs in the Londinian (Eocene, London clay) of Bognor, in Sussex and Hampstead, near London, England. As in *S. subquadratum*, the lines of growth start from the apex as noted by Darwin for that species. From the living *Scalpellum rutilum*, Darwin,² this carina differs in the flat, ungrooved roof, and strongly arched growth-lines.

A species of *Scalpellum* (*S. juliense*, Ortmann³), has been described from the Miocene of Patagonia, in which the outer surface of the carina is convexly rounded, and not flattened as in our species.

Observations.—The largest specimen (holotype) is incomplete, but probably wanting only 5 or 6 mm. The specimen was originally found in two parts, washed from a large quantity of clay, and it was only when examining the material in detail that the two parts were found to fit together.

Occurrence.—Bore 4, 163-170 feet, holotype and paratype (Carina and Scutum),—(Kalimnan or Janjukian). Bore 10, 310-320 feet, paratype (rostral latus), (Kalimnan or Janjukian).

Fam. BALANIDAE.

Genus BALANUS, Lister.

BALANUS PSITTACUS, Molina sp. (Plate X., Figs. 52*a*, *b*).

Lepas psittacus, Molina, 1788, Hist. Nat., Chile, vol. i., p. 223.

Balanus psittacus, Molina sp. Darwin, 1854, Mon. Cirripedia (Ray Soc.), vol. ii., p. 206, pl. ii., figs. 3*a-d*.

Balanus cf. *psittacus*, Molina sp., Ortmann, 1902, Rep. Princeton Univ. Exped., vol. iv., pt. ii., p. 249, pl. xxxviii., fig. 2.

Observations.—The identification of the Mallee specimens of the above, consisting as they do of only separated compartments, would have been practically impossible but for the other and more complete examples from the Kalimnan of Beaumaris in the

1. *Xiphidium quadratum*, Dixon, in Sowerby's Mineral Conch, vol. vii., 1846, pl. dclxviii. Dixon, Geol. of Sussex, 1850, pl. xiv., figs. 3, 4. *Scalpellum quadratum*, Dixon sp. Darwin, Mon. Foss. Lepadidae (Mon. Pal. Soc.), 1851, p. 22, pl. i. fig. 3.

2. Mon. Cirripedia (Ray. Soc.), 1851, p. 253, pl. vi., fig. 2.

3. Rep. Princeton Univ. Exped., Patagonia, 1896-9, vol. iv., pt. ii., 1902, p. 247, pl. xxxvii. Figs. 9*a-c*.

National Museum (W. Kershaw coll.), and from the same horizon at Muddy Creek, near Hamilton, in the Denant collection. The example from Beaumaris is identifiable with the specimen referred to, *B. cf. psittacus*, Molina sp., which has been found fossil in the Tertiary beds of Patagonia. *B. psittacus* is still found living, according to Darwin, along the coast of Chili, and very abundant at a few fathoms depth. Darwin remarks (loc. cit.) that this species is distinguished externally from *B. tintinnabulum*, another large and well-known form, by its hexagonal rather than its trigonal orifice. and, moreover, is not tinted so darkly as the latter species. It is the largest species of the genus, sometimes attaining a length, in the living examples, of nine inches.

Isolated compartments of the above species were found in the Mallee bore at one depth only. The Mallee specimens retain much of their original colour, although coming from the deepest part of bore 9, the sample of which contained a mixed Janjukian and Kalimnan fauna, and may be as old as the Miocene. One of the Mallee fossils is of a pale purplish tint, with about 7 primary and 7 secondary fine, longitudinal ribs of a dark purple. These ribs are noted by Darwin (loc. cit., p. 207), and also depicted by Ortmann (loc. cit., fig. 2). A fragment of the base of the parietes in one of the Mallee specimens indicates the deep cup-shaped habit of attachment in this species. In regard to the parietal tubes, as Darwin notes, they are unusually large in proportion to the size of the shell, and run up to the summit without any transverse septa. "The radii," to again quote Darwin, "are generally very highly developed, so that their summits are even wider than the bases of the parietes; but on the other hand, in some few large specimens, the radii are either very narrow or absolutely linear." In the figured specimen from the Mallee it will be noticed that the radii are similarly well-developed. The septa of the radii in the Mallee examples, as in the living *B. psittacus*, are strongly denticulated, as shown here (fig. 52*b*).

Occurrence.—Bore 4, 163-170 feet (Kalimnan or Janjukian). Bore 9, 315-325 feet (Kalimnan or Janjukian).

BALANUS VARIANS, Sowerby. (Plate X., Figs. 53, 54).

Balanus varians, G. B. Sowerby, 1846, in Darwin's Geol. Observations on South America, pl. ii., figs. 4-6.
Darwin, 1854, Mon. Cirripedia (Ray Soc.), vol. ii., p.

298, pl. viii., fig. 9. Ortmann, 1902, Rep. Princeton Univ. Exped., Patagonia, vol. iv., pt. ii., p. 250, pl. xxxviii., figs. 3a-e.

Observations.—By comparing the Mallee specimens with many other complete examples from Victoria, so far as regards the parietes and in one instance where the opercular plates have been preserved, one is enabled to draw some satisfactory conclusions as to the identity of the very abundant remains of barnacles in the borings. The compartments are all separate, excepting one instance, which is here figured. Like the preceding species, this form also occurs in the Patagonian Tertiaries at San Julian, and the scutum therein found (loc. cit., fig. 3d) is comparable with a specimen lately worked out of a fossil barnacle from Beaumaris, which I refer to the above species.

At first sight one would be inclined to place the fossil forms in the genus *Chthamalus*, as was done in the Dennant collection, but bearing in mind the distinctive features of the two genera, which have reversed characters as to disposition of alae and radii, the rostrum of *Balanus* possessing radii and not alae as in *Chthamalus*, as Darwin pointed out, the separation is at once easily made.

All the Mallee examples have the walls of the parietes strongly folded, but some specimens from Ascot, western Victoria, in the Dennant collection, identified as *Chthamalus stellatus*, have nearly smooth parietes.

The separated compartments of this species of *Balanus* are common in many of the bores, and seem to make their appearance at the top of the Janjukian, where, in Bore 9 at 315-325 feet, they are exceedingly common.

Occurrence.—Bore 6, 114-150 feet (Kalimnan); 158-161 feet (Kalimnan or Janjukian). Bore 8, 165-180 feet; 180-199 feet; 204-210 feet (Kalimnan or Janjukian). Bore 9, 254-256 feet (Kalimnan); 256-263 feet; 315-325 feet (Kalimnan or Janjukian). Bore 10, 254-296 feet; 310-320 feet (Janjukian). Bore 11, 197-199 feet; 199-209 feet (Kalimnan).

Class PISCES.

Fam. CESTRACIONTIDAE.

Genus CESTRACION, Cuvier.

CESTRACION CAINOZOICUS, Chapman and Pritchard. (Plate X., Fig. 55).

Cestracion cainozoicus, Chapman and Pritchard, 1904, Proc. Roy. Soc., Vict., vol. xvii. (N.S.), pt. i., p. 270, pl. xi., figs. 5-8; pl. xii., fig. 2.

An antero-lateral crushing tooth occurs in one of the bores at an horizon where fish remains are abundant, and which may be relegated to the top of the Janjukian. There is little doubt that it is related to the specific form which has been previously recorded from various localities in Victoria at or near the base of the Kalimnan. The formerly recorded occurrences were nearly all represented by the strong, broad lateral crushing teeth. The genus dates from Upper Jurassic times (*C. falcifer*, in the Solenhofen stone of Bavaria).

Occurrence.—Bore 8, 210-219 feet (Kalimnan or Janjukian).

Fam. TRYGONIIDAE.

Genus TRYGON, Adanson.

TRYGON *CF.* RUGOSUS, Probst sp. (Plate X., Figs. 56*a-d*).

Raia rugosus, Probst, (?) 1874, Beitrage zur Kenntniss der fossilen Fische aus der Molasse von Baltringen,—Wurtemberg Naturw. Jahresheft 1874-82 (not seen). Zittel-Barrois, 1893, Traite de Paleontologie, pt. i., vol. iii., pp. 102, 103, fig. 120*a-c*. *Trygon rugosus*, Probst sp. Eastman-Zittel, 1902, Text-book of Palaeontology, p. 42, fig. 83.

Observations.—A single specimen of a well-preserved tooth with bifurcated root was found in a sample of the Mallee bores containing an admixture of Kalimnan and Janjukian shells, but with a predominance of the latter fauna. Both in width and height the tooth measures 4.25 mm. In the Miocene marls of Baltringen, Wurtemberg, Probst found a similar pavement tooth, which he referred to *Raia*, but which has since been placed in the genus Trygon. Our specimen is in close agreement as regards both shape and structure, so that it seems advisable for the present to refer it tentatively to Probst's species, which came from a similar, or nearly similar, formation.

In respect to the generic position of the tooth, the marginal or border teeth of the living Thornbacks (*Raia*), which I have been able to examine in the National Museum through the kind offices of Mr. J. A. Kershaw, show a bicuspid root, but differing from the present specimen in having it more expansive or less hook-like than in the Mallee fossil.

Occurrence.—Bore 5, 163-175 feet (probably Janjukian).

Fam. MYLIOBATIDAE.

Genus MYLIOBATIS, Cuvier.

MYLIOBATIS MOORABBINENSIS, Chapman and Pritchard. (Plate X., Fig. 57).

Myliobatis moorabbinensis, Chapman and Pritchard, 1907, Proc. Roy. Soc., Vict., vol. xx. (N.S.), pt. i., p. 60, pl. v., figs. 1-3.

This species is represented in the Mallee bores in three samples by median palatal teeth. They agree in all particulars with the type examples from Beaumaris, with the exception of the figured specimen from the Mallee, which has a slightly larger number of denticles in a given length on the articulating surface. In its slender form and small size, whilst resembling the above species, it seems quite distinct from the living *Myliobatis australis*, Macleay. The type specimens came from a Kalimnan (Lower Pliocene) horizon.

Occurrence.—Bore 4, 163-170 feet (Kalimnan or Janjukian). Bore 9, 315-325 feet (Kalimnan or Janjukian). Bore 10, 225-230 feet (Kalimnan)—(figd. specimen).

Fam. SPARIDAE.

Genus CHRYSOPHRYS, Cuvier.

(?) CHRYSOPHRYS sp. (Plate X., Figs. 58, 59).

Observations.—Numerous small, rounded, grinding teeth occur in the clay washings from one or two of the Mallee bores. They are exactly comparable with those found in the Sea-Breams or *Chrysophrys*, living at the present time in Australian seas. When the basal surface is examined the structure is seen to be the same as in the living genus mentioned. Their occurrence as isolated teeth show them to be easily detachable from their cartilaginous setting, and therefore different from the closely paved pharyngeal dentition in *Labrodon*. Towards the base the tooth is frequently surrounded by a distinct cincture at its junction with the socket. The apex of the tooth is often worn, and shows a concentric structure.

Occurrence.—Bore 3, 201-220 feet (Kalimnan or Janjukian); 226 feet (Janjukian). Bore 8, 210-219 feet (Kalimnan or Janjukian).

A COMPLETE LIST OF FOSSILS FOUND IN THE MALLEE BORINGS ;
WITH THEIR PROBABLE GEOLOGICAL HORIZONS.

Janjukian (J)=Miocene. Kalimnan (K)=Lower Pliocene.

Werrikooian (W)=Upper Pliocene. K or J=mixed sample.

Name.	Geological horizons.			
PLANTAE.				
Boring Fungus, indet.	-	-	-	K. ?J.
Lithothamnion ramosissimum, Reuss sp.	-	-	-	J.
Lithothamnion, aff. lichenoides, Ellis and Solander	-	-	-	J.
Lithophyllum sp.	-	-	-	J.
ANIMALIA.				
Foraminifera—				
Biloculina elongata, d'Orbigny	-	-	-	K.
Biloculina irregularis, d'Orbigny	-	-	-	K. ?J.
Miliolina oblonga, Montagu sp.	-	-	-	K. (common). J. (rarely).
Miliolina circularis, Bornemann sp.	-	-	-	K. ?J.
Miliolina trigonula, Lamarck sp.	-	-	-	K. ?J.
Miliolina seminulum, Linné sp.	-	-	-	W. K. J.
Miliolina vulgaris, d'Orb. sp.	-	-	-	K. J.
Miliolina cuvieriana, d'Orb. sp.	-	-	-	J.
Miliolina ferussacii, d'Orb. sp.	-	-	-	K.
Miliolina bicornis, Walter and Jacob sp.	-	-	-	K. or J.
Miliolina schreiberiana, d'Orb. sp.	-	-	-	K.
Miliolina agglutinans, d'Orb. sp.	-	-	-	K. or J.
Miliolina (Massilina) secans, d'Orb. sp.	-	-	-	K.
Trillina howchini, Schlumberger	-	-	-	?K. J.
Sigmoilina schlumbergeri, A. Silvestri	-	-	-	J.
Planispirina sphaera, d'Orb. sp.	-	-	-	J.
Planispirina exigua, Brady	-	-	-	K. or J.
Hauerina intermedia, Howchin	-	-	-	K. or J.
Orbitolites complanata, Lam.	-	-	-	K. J.
Haplophragmium emaciatum, Brady	-	-	-	K. or J.
Haplophragmium canariense, d'Orb. sp.	-	-	-	K. or J.
Haplophragmium sphaeroidiniforme, Brady	-	-	-	J.
Ammodiscus ovalis, Chapman	-	-	-	W.
Textularia gibbosa, Brady	-	-	-	K. or J.
Spiroplecta sagittula, DeFrance sp.	-	-	-	J.
Spiroplecta gramen, d'Orb. sp.	-	-	-	J.
Gaudryina pupoides, d'Orb.	-	-	-	K. or J.
Gaudryina rugosa, d'Orb.	-	-	-	?K. J.
Verneuilina spinulosa, Reuss	-	-	-	J.
Bulimina elegans, d'Orb.	-	-	-	J.
Bulimina elegantissima, d'Orb.	-	-	-	K. J.
Bulimina contraria, Reuss sp.	-	-	-	J.
Virgulina schreibersiana, Czjzek	-	-	-	J.
Bolivina punctata, d'Orb.	-	-	-	?K. J.

Name.	Geological horizons.		
<i>Bolivina textilarioides</i> , Reuss	-	-	- J.
<i>Bolivina nobilis</i> , Hantken	-	-	- J.
<i>Bolivina limbata</i> , Brady	-	-	- J.
<i>Bolivina robusta</i> , Brady	-	-	- K.
<i>Cassidulina subglobosa</i> , Brady	-	-	- ?K. J.
<i>Cassidulina oblonga</i> , Reuss	-	-	- J.
<i>Lagena gracilis</i> , Williamson	-	-	- K. or J.
<i>Lagena squamosa</i> , Montagu sp.	-	-	- J.
<i>Lagena schlichti</i> , A. Silv.	-	-	- K. J.
<i>Lagena marginata</i> , Walker and Boys	-	-	- K. or J.
<i>Lagena orbignyana</i> , Seguenza	-	-	- K. or J.
<i>Nodosaria</i> (<i>Glandulina</i>) <i>laevigata</i> , d'Orb.	-	-	- K. or J.
<i>Nodosaria scalaris</i> , Batsch, sp.	-	-	- J.
<i>Nodosaria raphanus</i> , Linné sp.	-	-	- K. ?J.
<i>Nodosaria badenensis</i> , d'Orb.	-	-	- K. or J.
<i>Nodosaria affinis</i> , d'Orb.	-	-	- K. or J.
<i>Nodosaria</i> (<i>Dentalina</i>) <i>pauperata</i> , d'Orb. sp.	-	-	- J.
<i>Nodosaria</i> (<i>D.</i>) <i>consobrina</i> , d'Orb.	-	-	- J.
<i>Nodosaria</i> (<i>D.</i>) <i>soluta</i> , Reuss	-	-	- J.
<i>Nodosaria</i> (<i>D.</i>) <i>multilineata</i> , Born. sp.	-	-	- J.
<i>Nodosaria</i> (<i>D.</i>) <i>obliqua</i> , Linné sp.	-	-	- ?K. J.
<i>Frondicularia complanata</i> , Defr.	-	-	- W. K.
<i>Frondicularia inaequalis</i> , Costa	-	-	- J.
<i>Frondicularia lorifera</i> , Chapman	-	-	- ?K. J.
<i>Marginulina glabra</i> , d'Orb.	-	-	- ?K. J.
<i>Marginulina costata</i> , Batsch sp.	-	-	- J.
<i>Vaginulina legumen</i> , Linné sp.	-	-	- J.
<i>Cristellaria tricarinelata</i> , Reuss	-	-	- J.
<i>Cristellaria aculeata</i> , d'Orb.	-	-	- J.
<i>Cristellaria articulata</i> , Reuss (keeled var.)	-	-	- K. or J.
<i>Cristellaria rotulata</i> , Lam. sp.	-	-	- ?K. J.
<i>Cristellaria cultrata</i> , Montfort sp.	-	-	- ?K. J.
<i>Polymorphina lactea</i> , Walker and Jacob sp.	-	-	- W. K. J.
<i>Polymorphina gibba</i> , d'Orb.	-	-	- J.
<i>Polymorphina compressa</i> , d'Orb.	-	-	- W. K. ?J.
<i>Polymorphina elegantissima</i> , Parker and Jones	-	-	- K. J.
<i>Polymorphina dispar</i> , Stache	-	-	- J.
<i>Polymorphina communis</i> , d'Orb.	-	-	- K. J.
<i>Polymorphina problema</i> , d'Orb.	-	-	- K. J.
<i>Polymorphina oblonga</i> , d'Orb.	-	-	- K. J.
<i>Polymorphina regina</i> , Brady, Parker and Jones	-	-	- K. J.
<i>Polymorphina sororia</i> , Reuss	-	-	- K. or J.
<i>Polymorphina rotundata</i> , Born. sp.	-	-	- ?K. J.
<i>Uvigerina angulosa</i> , Williamson	-	-	- J.
<i>Uvigerina tenuistriata</i> , Reuss	-	-	- K.
<i>Sagrana striata</i> , Schlumberger	-	-	- K.
<i>Sagrana raphanus</i> , Parker and Jones	-	-	- J.
<i>Globigerina bulloides</i> , d'Orb.	-	-	- J.
<i>Globigerina triloba</i> , Reuss	-	-	- J.
<i>Globigerina conglobata</i> , Brady	-	-	- J.
<i>Pullenia quinqueloba</i> , Reuss	-	-	- W.

Name.	Geological horizons.		
Sphaeroidina bulloides, d'Orb.	-	-	- J.
Patellina corrugata, Will.	-	-	- K. J.
Discorbina araucana, d'Orb. sp.	-	-	- W.
Discorbina bertheloti, d'Orb. sp.	-	-	- ?K. J.
Discorbina parisiensis, d'Orb. sp.	-	-	- ?K. J.
Discorbina dimidiata, Parker and Jones	-	-	- J.
Discorbina globularis, d'Orb. sp.	-	-	- ?J.
Discorbina turbo, d'Orb. sp.	-	-	- K. J.
Discorbina pileolus, d'Orb. sp.	-	-	- J.
Discorbina obtusa, d'Orb. sp.	-	-	- J.
Discorbina biconcava, Parker and Jones	-	-	- J.
Planorbulina larvata, Parker and Jones	-	-	- ?K. J.
Truncatulina lobatula, Walker and Jacob sp.	-	-	- K. J.
Truncatulina variabilis, d'Orb.	-	-	- J.
Truncatulina refulgens, Montfort sp.	-	-	- W. K. J.
Truncatulina wuellerstorfi, Schwager sp.	-	-	- K.
Truncatulina ungeriana, d'Orb. sp.	-	-	- W. K. J.
Truncatulina akneriana, d'Orb. sp.	-	-	- J.
Truncatulina, reticulata, Czjzek sp.	-	-	- J.
Truncatulina tenera, Brady	-	-	- J.
Truncatulina haidingeri, d'Orb. sp.	-	-	- K. J.
Anomalina ammonoides, Reuss sp.	-	-	- K. J.
Anomalina polymorpha, Costa	-	-	- ?K. J.
Carpenteria proteiformis, Goës	-	-	- J.
Pulvinulina elegans, d'Orb. sp.	-	-	- K. J.
Pulvinulina elegans, var. partschiana, d'Orb. var.	-	-	- J.
Pulvinulina repanda, Fichtel and Moll, sp.	-	-	- W. K. J.
Pulvinulina repanda, var. concamerata, Mont. var.	-	-	- J.
Pulvinulina calabra, Costa sp.	-	-	- K. or J.
Pulvinulina auricula, Fichtel and Moll. sp.	-	-	- K.
Pulvinulina karsteni, Reuss	-	-	- J.
Pulvinulina truncatulinoïdes, d'Orb. sp.	-	-	- J.
Pulvinulina schreibersii, d'Orb. sp.	-	-	- J.
Rotalia beccarii, L. sp.	-	-	- W. K. J.
Rotalia papillosa, Brady	-	-	- K. or J.
Rotalia papillosa, var. compressiuscula, Brady	-	-	- K. J.
Rotalia clathrata, Brady	-	-	- K. J.
Rotalia calcar, d'Orb. sp.	-	-	- J.
Rotalia orbicularis, d'Orb. sp.	-	-	- ?K. J.
Rotalia soldanii, d'Orb.	-	-	- ?K. J.
Rotalia venusta, Brady	-	-	- J.
Gypsina howchini, Chapman	-	-	- J.
Gypsina vesicularis, Parker and Jones	-	-	- J.
Gypsina globulus, Reuss sp.	-	-	- ?K. J.
Nonionina depressula, Walker and Jacob sp.	-	-	- W. J.
Nonionina umbilicatulata, Mont. sp.	-	-	- J.
Nonionina boueana, d'Orb.	-	-	- K.
Nonionina scapha, F. and M. sp.	-	-	- K. or J.
Polystomella striatopunctata, Fichtel and Moll.	-	-	- W. K.
sp.			

Name.		Geological horizons.
Polystomella striatopunctata, var. evoluta,	-	K. ?J.
Chapman - - - -	-	-
Polystomella macella, Fichtel and Moll. sp.	-	K. J.
Polystomella crispa, L. sp. - -	-	W. K. J.
Polystomella subnodosa, Münster sp. -	-	K. or J.
Polystomella imperatrix, Brady - -	-	J.
Polystomella verriculata, Brady - -	-	?K. J.
Polystomella craticulata, Fichtel and Moll. sp.-	-	K. J.
Amphistegina lessonii, d'Orb. - -	-	?K. J.
Operculina complanata, Deifr. - -	-	?K. J.
Operculina complanata, var. granulosa, Leymerie-	-	K. J.
Operculina venosa, Fichtel and Moll. sp. -	-	J.
Spongiae—		
Calcsponges, triradiate spicules of,	-	K. (rare). J.
Anthozoa—		
Holcotrochus crenulatus, Denant - -	-	K.
Placotrochus elongatus, Duncan - -	-	?K. J.
Placotrochus deltoideus, Duncan - -	-	?K. J.
Sphenotrochus emarciatus, Duncan - -	-	?K. J.
Deltocyathus fontinalis, Dennant - -	-	?K. J.
Bathyaectis lens, Duncan sp. - -	-	?K. J.
Bathyaectis beaumariensis, Dennant - -	-	K. ?J.
Notophyllia variolaris, Dennant - -	-	K. J.
Graphularia senescens, Tate sp. - -	-	K. or J.
Mopsea tenisoni, Chapman - -	-	?K. J. (common);
Mopsea hamiltoni, Thomson - -	-	?K. J.
Isis compressa, Duncan - -	-	J.
Echinoderma—		
Antedon protomacronema, Chapman - -	-	J.
Pentagonaster sp. - - - -	-	K. J. (common)..
Cidaris sp. - - - -	-	J.
Goniocidaris sp. - - - -	-	J.
Paradoxechinus novus, Laube - -	-	J.
Psammechinus woodsi, Laube sp. - -	-	J.
Echinocyamus (Scutellina) patella, Tate sp.	-	?K. J. (common)..
Fibularia gregata, Tate - - - -	-	?K. J. (common)..
Clypeaster gippslandicus, McCoy - -	-	K. ?J.
Arachnoides (Monostychia) australis, Laube sp.	-	?K. J.
Echinoneus dennanti, Hall - - - -	-	J.
Linthia sp. - - - -	-	K. or J.
cf. Eupatagus sp. - - - -	-	J.
Lovenia forbesi, T. Woods sp. - -	-	?K. J.
Annelida—		
Serpula ouyenensis, Chapman - - - -	-	?K. J.
Ditrupa cornea, L. sp., var. wormbetiensis, McCoy-	-	K. J. (common)..
Ditrupa cornea, L. sp., var. constricta, Chapm. -	-	?K. J.
Spirorbis heliciformis, Eichwald - -	-	K. J.
Polyzoa—		
Cyclostomata—		
Idmonea hochstetteri, Stoliczka sp. - -	-	K. or J.
Idmonea lata, Macgillivray - - - -	-	K. or J.

Name.	Geological horizons.		
Hornera diffusa, Macgillivray	-	-	- K. or J.
Hornera frondiculata, Lamaroux	-	-	- K. or J.
Diastopora patina, Lamaroux	-	-	- J.
Entalophora nr. sparsa, Maplestone	-	-	- K. or J.
Entalophora verticillata, Goldfuss sp.	-	-	- J.
Lichenopora australis, Macgill.	-	-	- K. or J.
Lichenopora porosa, Macgill.	-	-	- ?K. J. (common).
Lichenopora radiata, Audrouin sp.	-	-	- J.
Lichenopora wilsoni, Macgill.	-	-	- J.
Heteropora pisiformis, Macgill.	-	-	- K. or J.
Cheilostomata—			
Catenicella sp.	-	-	- K.
Claviporella sp.	-	-	- K. or J.
Caberea grandis, Hincks	-	-	- K. or J.
Cellaria acutimarginata, Macgill. sp.	-	-	- J.
Cellaria angustiloba, Busk sp.	-	-	- J.
Cellaria australis, Macgill.	-	-	- K. J.
Cellaria contigna, Macgill.	-	-	- ?K. J. (common).
Cellaria rigida, Macgill.	-	-	- ?K. J. (common).
Cellaria rigida, var. perampla, Waters	-	-	- J.
Cellaria rigida, var. venusta, Macgill.	-	-	- J.
Membranipora cf. fossa, Macgill.	-	-	- J.
Lunulites canaliculata, Macgill.	-	-	- K. or J.
Lunulites (?) parvicella, T. Woods sp.	-	-	- K.
Selenaria cf. concinna, T. Woods	-	-	- K. or J.
Selenaria cupola, T. Woods sp.	-	-	- K. J.
Selenaria marginata, T. Woods	-	-	- K. J.
Selenaria marginata, var. lucens, Macgill.	-	-	- K. ?J.
Selenaria marginata, var. pulchella, Macgill.	-	-	- K. or J.
Selenaria marginata, var. spiralis, Chapman	-	-	- K. ?J.
Steganoporella magnilabris, Busk sp.	-	-	- J.
Steganoporella patula, Waters sp.	-	-	- J.
Macropora clarkei, T. Woods sp.	-	-	- J.
Microporella magna, T. Woods sp.	-	-	- J.
Tessarodoma elevata, Waters sp.	-	-	- J.
Tessarodoma magnirostris, Macgill.	-	-	- J.
Adeona sp.	-	-	- J.
Lepralia burlingtoniensis, Waters	-	-	- J.
Lepralia corrugata, Macgill.	-	-	- J.
Lepralia crassatina, Waters sp.	-	-	- J.
Lepralia elongata, Macgill.	-	-	- ?K. J.
Lepralia gippslandii, Waters	-	-	- K. or J.
Lepralia (?) graysoni, Maplestone	-	-	- J.
Schizoporella (?) convexa, Macgill.	-	-	- K. or J.
Bipora cancellata, Busk sp.	-	-	- K. or J.
Bipora philippinensis, Busk sp.	-	-	- ?K. J.
Smittia tatei, T. Woods sp.	-	-	- J.
Porina gracilis, M. Edwards sp.	-	-	- J.
(?) Lekythopora sp.	-	-	- J.
Cellepora fossa, Haswell sp.	-	-	- ?K. J. (common).
Cellepora gambierensis, T. Woods	-	-	- ?K. J.

Name.	Geological horizons.		
<i>Cellepora tridenticulata</i> , Busk	-	-	- K. or J.
<i>Cellepora tridenticulata</i> , var. <i>nummularia</i> , Busk	-	-	- ?K. J.
(?) <i>Schismopora costazei</i> , Andr. sp.	-	-	- J.
<i>Schismopora incus</i> , Macgill.	-	-	- K. or J.
<i>Retepora producta</i> , Busk	-	-	- ?K. J.
Brachiopoda—			
<i>Terebratulina catinuliformis</i> , Tate	-	-	- ?K. J. (common).
<i>Terebratulina triangularis</i> , Tate	-	-	- J.
<i>Terebratulina flindersi</i> , Chapm.	-	-	- J.
<i>Terebratula tateana</i> , T. Woods	-	-	- J.
<i>Terebratella acutirostra</i> , Chapm.	-	-	- J.
<i>Terebratella portlandica</i> , Chapm.	-	-	- K. J.
<i>Magasella compta</i> , Sow. sp.	-	-	- K. ?J.
<i>Magasella lunata</i> , Tate	-	-	- ?K. J.
<i>Magasella woodsiana</i> , Tate	-	-	- ?K. J.
<i>Magellania garibaldiana</i> , Davidson sp.	-	-	- J.
<i>Magellania insolita</i> , Tate	-	-	- J.
Pelecypoda—			
<i>Nucula morundiana</i> , Tate	-	-	- K.
<i>Nucula obliqua</i> , Lamarek	-	-	- K. ?J.
<i>Nucula semistriata</i> , Tate	-	-	- K. ?J.
<i>Leda acinaciformis</i> , Tate	-	-	- K. ?J.
<i>Leda apiculata</i> , Tate	-	-	- K.
<i>Leda crassa</i> , Hinds	-	-	- K.
<i>Leda huttoni</i> , T. Woods	-	-	- K. or J.
<i>Leda woodsi</i> , Tate	-	-	- K. ?J.
<i>Cucullaea corioensis</i> , McCoy	-	-	- K. or J.
<i>Limopsis beaumariensis</i> , Chapm.	-	-	- K. J. (rare).
<i>Limopsis beaumariensis</i> , var. <i>depressa</i> , Chapm.	-	-	- K. ?J.
<i>Limopsis insolita</i> , G. Sow. sp.	-	-	- K. or J.
<i>Arca</i> (Fossularca) <i>dissimilis</i> , Tate sp.	-	-	- J.
<i>Lissarca rubricata</i> , Tate sp.	-	-	- K.
<i>Glycimeris cainozoicus</i> , T. Woods sp.	-	-	- K. or J.
<i>Glycimeris convexus</i> , Tate sp.	-	-	- K. ?J.
<i>Glycimeris halli</i> , Pritchard	-	-	- K. ?J.
<i>Glycimeris halli</i> , var. <i>intermedia</i> , Pr.	-	-	- K. ?J.
<i>Glycimeris halli</i> , var. <i>paucicostata</i> , Pr.	-	-	- K. ?J.
<i>Glycimeris maccoyi</i> , Johnston sp.	-	-	- K. ?J.
<i>Perna percerassa</i> , Tate sp.	-	-	- K. or J.
<i>Pteria</i> (Margaritifera) <i>crassicaudia</i> , Tate sp.	-	-	- K. ?J.
<i>Ostrea hyotidoidea</i> , Tate	-	-	- K. or J.
<i>Ostrea manubriata</i> , Tate	-	-	- K. or J.
<i>Gryphaea tarda</i> , Hutton	-	-	- K. or J.
<i>Trigonia howitti</i> , McCoy	-	-	- K.
<i>Trigonia lamarcki</i> , Gray	-	-	- K. or J.
<i>Trigonia margaritacea</i> , Lam., var. <i>acuticostata</i> , McCoy	-	-	- K. ?J.
<i>Pecten antiaustralis</i> , Tate	-	-	- K.
<i>Pecten eyrei</i> , Tate	-	-	- K. or J.
<i>Pecten flindersi</i> , Tate	-	-	- J.
<i>Pecten foulcheri</i> , T. Woods	-	-	- J.

Name.	Geological horizons			
<i>Pecten gambierensis</i> , T. Woods	-	-	-	J.
<i>Pecten murrayanus</i> , Tate	-	-	-	K. ?J.
<i>Pecten peroni</i> , Tate	-	-	-	K. or J.
<i>Pecten polymorphoides</i> , Zittel	-	-	-	J.
<i>Pecten praeursor</i> , Chapm.	-	-	-	J.
<i>Pecten sturtianus</i> , Tate	-	-	-	K. or J.
<i>Amussium zitteli</i> , Hutton	-	-	-	K. or J.
<i>Spondylus gaederopoides</i> , McCoy	-	-	-	J.
<i>Dimya dissimilis</i> , Tate	-	-	-	K. or J.
<i>Lima (Limatula) jeffreysiana</i> , Tate	-	-	-	K. J.
<i>Placunanomia ione</i> , Gray	-	-	-	K. or J.
<i>Mytilus deperditus</i> , Tate	-	-	-	K.
<i>Arcoperna scapha</i> , Verco	-	-	-	J.
<i>Crassatellites communis</i> , Tate sp.	-	-	-	K. ?J.
<i>Crassatellites kingicoides</i> , Pritchard	-	-	-	K.
<i>Cuna concentrica</i> , Hedley	-	-	-	K. ?J.
<i>Cuna polita</i> , Tate sp.	-	-	-	K.
<i>Cuna radiata</i> , Tate sp.	-	-	-	?K. J.
<i>Condylocardia tenuicostae</i> , Chapm. and Gabriel	-	-	-	?J.
<i>Cardita calva</i> , Tate	-	-	-	K.
<i>Cardita compacta</i> , Tate	-	-	-	K. J.
<i>Cardita latissima</i> , Tate	-	-	-	J.
<i>Cardita pecten</i> , Tate	-	-	-	K. ?J.
<i>Cardita solida</i> , Tate	-	-	-	K. ?J.
<i>Cardita spinulosa</i> , Tate	-	-	-	K. ?J.
<i>Rochefortia donaciformis</i> , Angas sp.	-	-	-	J.
<i>Erycina micans</i> , Tate sp.	-	-	-	K.
<i>Montacuta sericea</i> , Tate	-	-	-	K.
<i>Dosinea grayi</i> , Zittel	-	-	-	K.
<i>Venus (Chione) hormophora</i> , Tate sp.	-	-	-	K. or J.
<i>Venus (Ch.) propinqua</i> , T. Woods sp.	-	-	-	K. ?J.
<i>Venus (Ch.) subroborata</i> , Tate sp.	-	-	-	K. ?J.
<i>Meretrix murrayana</i> , Tate sp.	-	-	-	K.
<i>Psammobia aequalis</i> , Tate	-	-	-	K.
<i>Donax kenyoniana</i> , Chapm. and Gabr.	-	-	-	K.
<i>Mactra axiniformis</i> , Tate	-	-	-	K.
<i>Mactra hamiltonensis</i> , Tate	-	-	-	K.
<i>Mactra howchiniana</i> , Tate	-	-	-	K.
<i>Corbula coxi</i> , Pilsbry	-	-	-	K. (common). J. (rare).
<i>Corbula ephamilla</i> , Tate	-	-	-	K. J.
<i>Corbula pyxidata</i> , Tate	-	-	-	K. or J.
<i>Barnea tiara</i> , Tate	-	-	-	K.
Scaphopoda—				
<i>Dentalium aratum</i> , Tate	-	-	-	J.
<i>Dentalium australe</i> , Sharp and Pilsbry	-	-	-	K. or J.
<i>Dentalium latesulcatum</i> , Tate	-	-	-	K. or J.
<i>Dentalium mantelli</i> , Zittel	-	-	-	K. or J.
<i>Cadulus acuminatus</i> , Tate	-	-	-	K.
Polyplacophora—				
Chitons, indet.	-	-	-	K. or J.

Name.	Geological horizons.		
Gasteropoda—			
Liopyrga quadricingulata, Tate	-	-	- K. ?J.
Liopyrga sayceana, Tate	-	-	- K. or J.
Liotia dennanti, Chapm. and Gabr.	-	-	- K. or J.
Euchelus tasmanicus, T. Woods	-	-	- K. or J.
Clanculus aff. aloysii, T. Woods	-	-	- K. or J.
Teinostoma depressula, Chapm. and Gabr.	-	-	- K.
Teinostoma pulcherrima, Chapm. and Gabr.	-	-	- K.
Cyclostrema homalon, Verco	-	-	- K.
Cyclostrema harriettae, Petterd	-	-	- K.
Eulima pinguicula, Chapm. and Gabr.	-	-	- K.
Niso psila, T. Woods	-	-	- K. or J.
Pyramidella jonesiana, Tate sp.	-	-	- K. ?J.
Turbonilla weeahensis, Chapm. and Gabr.	-	-	- K. ?J.
Eglisia triplicata, T. Woods sp.	-	-	- K. ?J.
Calyptreaa corrugata, Tate	-	-	- K. ?J.
Calyptreaa kalimnae, Chapm. and Gabr.	-	-	- K. ?J.
Natica cunninghamensis, Harris	-	-	- K. ?J.
Natica hamiltonensis, Tate	-	-	- K. J.
Natica perspectiva, Tate	-	-	- K. J.
Natica subinfundibulum, Tate	-	-	- K.
Natica subinfundibulum, var crassa, Tate	-	-	- K.
Natica substolida, Tate	-	-	- K. (common). J.
Natica subvarians, Tate	-	-	- (rare).
Natica wintlei, T. Woods	-	-	- K.
Rissoa gatliffeana, Chapm. and Gabr.	-	-	- J.
Rissoa varicifera, T. Woods	-	-	- K.
Rissoa (Onoba) bassiana, Hedley	-	-	- K. or J.
Rissoa (O.) chrysalida, Chapm. and Gabr.	-	-	- K. ?J.
Turritella circumligata, Verco	-	-	- K. ?J.
Turritella murrayana, Tate	-	-	- ?J.
Turritella pagodula, Tate	-	-	- J.
Turritella platyspira, T. Woods	-	-	- K. ?J.
Turritella tristira, Tate	-	-	- K. J.
Cerithium torrii, Tate	-	-	- K. J.
Tylospira coronata, Tate sp.	-	-	- K.
Cassis contusus, Tate	-	-	- K. ?J.
Cassis (Semicassis) subgranosa, Tate sp.	-	-	- K.
Lotorium tortirostre, Tate sp.	-	-	- K.
Lotorium tumulosum, Tate sp.	-	-	- K. (basal bed).
Nassa spiralscabra, Chapm. and Gabr.	-	-	- J.
Zemira praeursoria, Tate	-	-	- K.
Tudicla costata, Tate	-	-	- ?K. J.
Tudicla turbinata, Tate	-	-	- J.
Fasciolaria rugata, Tate	-	-	- K.
Marginella hordeacea, Tate	-	-	- J.
Marginella muscarioides, Tate	-	-	- K.
Marginella praeformicula, Chapm. and Gabr.	-	-	- K. ?J.
Marginella wentworthi, T. Woods	-	-	- K. ?J.
Voluta weldi, T. Woods	-	-	- K. J.
Ancilla hebera, Hutton sp.	-	-	- ?K. J.

Name.	Geological horizons.			
<i>Ancilla papillata</i> , Tate sp.	-	-	-	K. ?J.
<i>Terebra angulosa</i> , Tate	-	-	-	K. or J.
<i>Terebra geniculata</i> , Tate	-	-	-	K. ?J.
<i>Terebra profunda</i> , Chapm. and Gabr.	-	-	-	K. ?J.
<i>Terebra simplex</i> , T. Woods	-	-	-	K.
<i>Terebra subspectabilis</i> , Tate	-	-	-	J.
<i>Pleurotoma selwyni</i> , Pritch.	-	-	-	K.
<i>Pleurotoma trilirata</i> , Harris	-	-	-	K. or J.
<i>Pleurotoma</i> (<i>Drillia</i>) <i>dilectoides</i> , Chapm. and Gabr.	-	-	-	J.
<i>Pleurotoma</i> (<i>D.</i>) <i>trevori</i> , T. Woods sp.	-	-	-	K.
<i>Bela sculptilis</i> , Tate	-	-	-	J.
<i>Tornatina aptycha</i> , Cossmann	-	-	-	K.
<i>Volvulella inflator</i> , Cossmann	-	-	-	K.
<i>Bullinella aratula</i> , Cossmann	-	-	-	K.
<i>Vaginella</i> cf. <i>eligmostoma</i> , Tate	-	-	-	?J.
Ostracoda—				
<i>Argilloecia badia</i> , G. S. Brady	-	-	-	J.
<i>Macrocypris decora</i> , G.S.B. sp.	-	-	-	K. J.
<i>Macrocypris tumida</i> , G.S.B.	-	-	-	K. J.
<i>Bythocypris tumefacta</i> , Chapm.	-	-	-	K. J.
<i>Bairdia amygdaloides</i> , G.S.B.	-	-	-	K. J.
<i>Bairdia australis</i> , Chapm.	-	-	-	K. J.
<i>Cythere canaliculata</i> , Reuss sp.	-	-	-	K. J.
<i>Cythere crispata</i> , G.S.B.	-	-	-	J.
<i>Cythere dasyderma</i> , G.S.B.	-	-	-	J.
<i>Cythere demissa</i> , G.S.B.	-	-	-	K.
<i>Cythere dictyon</i> , G.S.B.	-	-	-	K. J.
<i>Cythere flexicostata</i> , Chapm.	-	-	-	K. or J.
<i>Cythere lactea</i> , G.S.B.	-	-	-	?K. J.
<i>Cythere lepralioides</i> , G.S.B.	-	-	-	K. ?J.
<i>Cythere lubbockiana</i> , G.S.B.	-	-	-	K. J.
<i>Cythere militaris</i> , G.S.B. sp.	-	-	-	K. J.
<i>Cythere normani</i> , G.S.B.	-	-	-	?K. J.
<i>Cythere obtusalata</i> , G.S.B.	-	-	-	?K. J.
<i>Cythere ovalis</i> , G.S.B.	-	-	-	J.
<i>Cythere parallelogramma</i> , G.S.B.	-	-	-	?K. J.
<i>Cythere postdeclivis</i> , Chapm.	-	-	-	?K. J.
<i>Cythere rastromarginata</i> , G.S.B.	-	-	-	W. K. ?J.
<i>Cythere scabrocuneata</i> , G.S.B.	-	-	-	J.
<i>Cythere scintillulata</i> , G.S.B.	-	-	-	J.
<i>Cythere scutigera</i> , G.S.B.	-	-	-	J.
<i>Cythere wyville-thomsoni</i> , G.S.B.	-	-	-	K. or J.
<i>Krithe eggeri</i> , Chapm.	-	-	-	K.
<i>Loxoconcha australis</i> , G.S.B.	-	-	-	K. J.
<i>Xestoleberis curta</i> , G.S.B. sp.	-	-	-	K.
<i>Xestoleberis margaritea</i> , G.S.B.	-	-	-	J.
<i>Xestoleberis variegata</i> , G.S.B.	-	-	-	J.
<i>Cytherura capillifera</i> , Chapm.	-	-	-	K.
<i>Cytherura ouyensis</i> , Chapm.	-	-	-	J.
<i>Cytheropteron batesfordiense</i> , Chapm.	-	-	-	?K. J.

Name.	Geological horizons.		
<i>Cytheropteron batesfordiense</i> , var. <i>aculeata</i> , Chapm.	-	-	J.
<i>Cytheropteron postumbonatum</i> , Chapm.	-	-	K. or J.
<i>Cytheropteron praeantarticum</i> , Chapm.	-	-	K.
<i>Cytheropteron reticosum</i> , Chapm.	-	-	K.
<i>Cytheropteron rostratum</i> , Chapm.	-	-	J.
<i>Cytherella auriculus</i> , Chapm.	-	-	K.
<i>Cytherella lata</i> , G.S.B.	-	-	K. or J.
<i>Cytherella polita</i> , G.S.B.	-	-	K. J.
<i>Cytherella pulchra</i> , G.S.B.	-	-	K. J.
<i>Cytherella punctata</i> , G.S.B.	-	-	K. J.
<i>Cytherella subtruncata</i> , Chapm.	-	-	K.
Cirripedia—			
<i>Scalpellum subquadratum</i> , Chapm.	-	-	K. or J.
<i>Balanus psittacus</i> , Molina sp.	-	-	K. or J.
<i>Balanus varians</i> , G. Sow.	-	-	K. J.
Decapoda—			
Chelae of crustacea, indet.	-	-	K. J.
Pisces—			
<i>Cestracion cainozoicus</i> , Chapm. and Pritch.	-	-	K. or J.
<i>Galeocерdo aduncus</i> , Agassiz	-	-	K. or J.
<i>Lamna compressa</i> , Agassiz	-	-	J.
<i>Carcharodon auriculatus</i> , Blainv. sp.	-	-	K. or J.
<i>Trygon</i> cf. <i>rugosus</i> , Probst sp.	-	-	J. (probably).
<i>Myliobatis moorabbinensis</i> , Chapm. and Pritch.	-	-	K. ?J.
Chimaeroid teeth, indet.	-	-	J.
(?) <i>Chrysophrys</i> sp.	-	-	?K. J.
<i>Diodon formosus</i> , Chapm. and Pritch.	-	-	K. ?J.
Teleostean fish otoliths	-	-	K. J.



EXPLANATION OF PLATES.

PLATE VI.

- Fig. 1.—*Argilloecia badia*, G. S. Brady. Right valve. Mallee Bore, No. 5, 189-190 feet. $\times 52$.
- Fig. 2.—*Marocypris decora*, G. S. Brady sp. Right valve; specimen showing original colour markings. Mallee Bore, No. 9, 256-263 feet. $\times 52$.
- Fig. 3.—*Macrocypris tumida*, G. S. Brady. Right valve. Mallee Bore, No. 10, 310-320 feet. $\times 52$.
- Fig. 4.—*Bythocypris tumefacta*, sp. nov. *a*, Carapace seen from the right side; *b*, seen from below; *c*, end view, Mallee Bore, No. 11, 542-544 feet. $\times 40$.
- Fig. 5.—*B. tumefacta*, sp. nov. Another specimen (paratype), left valve. Mallee Bore No. 10, 310-320 feet. $\times 40$.
- Fig. 6.—*Bairdia amygdaloides*, G. S. Brady. Left valve. Mallee Bore, No. 10, 310-320 feet. $\times 52$.

- Fig. 7.—*Bairdia australis*, sp. nov. Right valve. Mallee Bore, No. 9, 256-263 feet. $\times 52$.
- Fig. 8.—*Cythere caudiculata*, Reuss sp. Right valve. Mallee Bore, No. 11, 219-260 feet. $\times 52$.
- Fig. 9.—*Cythere crispata*, G. S. Brady. Right valve. Mallee Bore, No. 11, 554-556 feet. $\times 52$.
- Fig. 10.—*Cythere dasyderma*, G. S. Brady. Left valve. Mallee Bore, No. 11, 554-556 feet. $\times 52$.
- Fig. 11.—*Cythere demissa*, G. S. Brady. Left valve. Mallee Bore, No. 10, 160-186 feet. $\times 52$.

PLATE VII.

- Fig. 12.—*Cythere dictyon*, G. S. Brady. Left valve of a youthful form, and well preserved. Mallee Bore, No. 9, 315-325 feet. $\times 40$.
- Fig. 13.—*C. dictyon*, G.S.B. Right valve of a senile form, with smoother and thicker carapace. Mallee Bore, No. 11, 438-440 feet. $\times 40$.
- Fig. 14.—*Cythere flexicostata*, sp. nov. *a*, Right valve; *b*, profile of valve seen from above. Mallee Bore, No. 10, 310-320 feet. $\times 52$.
- Fig. 15.—*Cythere lactea*, G. S. Brady. Right valve. Mallee Bore, No. 11, 562-564 feet. $\times 40$.
- Fig. 16.—*Cythere lepralioides*, G. S. Brady. Right valve. Mallee Bore, No. 8, 210-219 feet. $\times 52$.
- Fig. 17.—*Cythere lubbockiana*, G. S. Brady. Right valve. Mallee Bore, No. 11, 260-265 feet. $\times 52$.
- Fig. 18.—*Cythere militaris*, G. S. Brady sp. Right valve. Mallee Bore, No. 9, 256-263 feet. $\times 52$.
- Fig. 19.—*Cythere normani*, G. S. Brady. Right valve. Mallee Bore, No. 10, 310-320 feet. $\times 40$.
- Fig. 20.—*Cythere obtusulata*, G. S. Brady. Right valve. Mallee Bore, No. 9, 256-263 feet. $\times 52$.
- Fig. 21.—*Cythere ovalis*, G. S. Brady. Left valve. Mallee Bore, No. 11, 276-270 feet. $\times 40$.
- Fig. 22.—*Cythere parallelogramma*, G. S. Brady. Left valve. Mallee Bore, No. 9, 315-325 feet. $\times 52$.
- Fig. 23.—*Cythere postdeclivis*, sp. nov. *a*, Left valve; *b*, profile of valve. Mallee Bore, No. 10, 310-320 feet. $\times 40$.
- Fig. 24.—*Cythere rastromarginata*, G. S. Brady. Right valve. Mallee Bore, No. 11, 170-175 feet. $\times 52$.



